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A Graphic Handbook for Students of Human Anatomy

BY

C. GORDON BRODIE, F.R.C.S.

SENIOR DEMONSTRATOR OF ANATOMY, MIDDLESEX HOSPITAL MEDICAL SCHOOL
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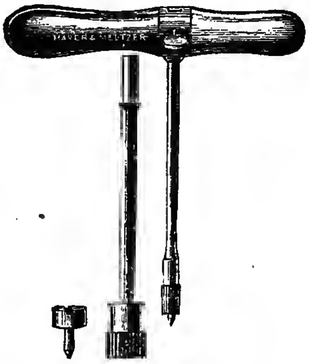

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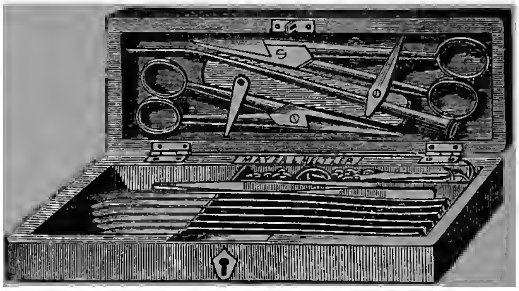

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PREFACE

In designing these plates the author has had in his mind the valuable assistance rendered to him in the first years of his curriculum by the magnificent plates of Professor Ellis, which, however useful they may be, are too large to be portable, and too expensive for most students to obtain. In order to get over these difficulties, the plates, instead of being life-size, are reduced by one-third, thus making a convenient and portable book; and it is hoped that the price will place these 'dissections' within the reach of all those who care for a graphic representation of Anatomy. A picture or a diagram of anatomy is far more useful in fixing the position of parts than a mere written description; moreover, it is the best means of teaching the relations of the different structures, and so impressing them upon the memory that they can be easily recalled when later the student is engaged in surgical or medical work. The best picture is of course the body itself, and it is here that the student must lay, *by careful dissection*, a good and sound foundation of his anatomical work. The author ventures to place these plates before the student as portraying the different structures in their normal positions which he has to search for and display during his dissections. Thus they will serve as models, and further will recall the work already done when revising his anatomy previous to an examination. And, moreover, when in after-years he has settled down into the staid and prosperous practitioner, the author hopes that, should any anatomical difficulty arise when there is no subject to refer to, these plates may serve to fill a gap by showing the relations of the different structures to one another, and thus recall work long since relegated to the background.

The dissections only aim at showing the ordinary detail which any careful worker can dissect for himself, and not unnecessary minutiæ. The various structures have been kept also as closely as possible in their normal relations to each other.

No pains have been spared to make the plates correct, and especially in regard to the diagrams, which are mostly from original work by the author during his demonstratorship at the Middlesex Hospital Medical School.

To Mr. PERCY HIGHLEY great credit is due for the masterly way in which the plates have been both drawn from nature and placed on stone, and also for rapidly grasping and representing artistically the intentions of the author. All the small cuts have been drawn from the skeleton, and in introducing the outline of the bones—a new feature—the relative positions of bony landmarks to the cutaneous tissues have been shown.

The author tenders his sincere thanks to Mr. HENSMAN for the kind way in which, at some personal inconvenience, he read through and criticised the letterpress at the final revision; and also for the facilities which he afforded the author in allowing the use of the material from which the dissections were made.

To Mr. DOBBIN the author returns thanks for help in the dissection of some of the plates.

C. GORDON BRODIE.

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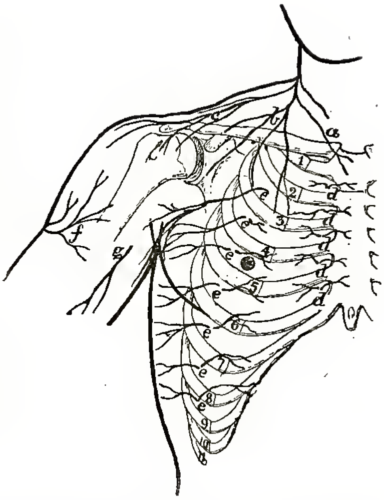
PLATE I.

THE AXILLA, SUPERFICIAL VIEW.



The cutaneous nerves which supply the front of thorax and upper arm are indicated by black lines in the accompanying diagram, viz.:—(*a*) Sternal, (*b*) clavicular, (*c*) acromial branches from the cervical plexus (3 and 4 c); (*d*) anterior, and (*e*) lateral cutaneous branches of the intercostals; (*f*) branches from circumflex; (*g*) upper branches of the internal cutaneous. The position of the bones is shown in faint outline.

The AXILLA is a pyramidal space with the base directed downwards and outwards, and covered in by dense fascia; and the apex directed upwards and inwards between the clavicle and first rib. The boundaries are:—

In front: Pectoralis major and minor, costo-coracoid membrane, and subclavius muscle.

Behind: Subscapularis, latissimus dorsi, and teres major muscles.

Externally: Coraco-brachialis and biceps muscles, and humerus.

Internally: About five ribs, their intercostals, and five serrations of serratus magnus.

It contains the axillary vessels and brachial plexus of nerves running along its outer wall, with their branches. Lymphatic glands: one set along the line of the vessels receiving the lymph from the arm; another along the edge of the pectoralis major, receiving the lymph from the breast and front of thorax; and a third set along the line of the subscapular vessels, receiving the lymph from the back of thorax. There are also lateral branches of the intercostal nerves, and the space is filled with a packing of fat.

The *intercosto-humeral* nerve, the lateral cutaneous branch of the second intercostal nerve, usually sends a branch to join the nerve of Wrisberg; but if the latter is larger than usual, it will in turn give off one to join the intercosto-humeral, as in the plate.

The *first intercostal* nerve usually sends no lateral cutaneous branch, but it is occasionally present (*vide* Plate III.) and then generally joins the nerve of Wrisberg, giving a twig to join the intercosto-humeral.

The nerve-twig *marked* (7) is a special branch of the musculo-spiral to the lower fibres of the internal head of the triceps, and from its course parallel to, and being sometimes bound up with, the ulnar nerve, it is called the *ulnar collateral.*

The *posterior* or *long thoracic* is also known as the external respiratory nerve of Bell.

PLATE I.

MUSCLES

A Pectoralis major.
B Pectoralis minor.
C Serratus magnus.
D Subscapularis.
E Latissimus dorsi.
F Teres major.
G Triceps.
H Coraco-brachialis.
K Deltoid.
X Placed on the deep fascia of the arm where it receives its slip from the pectoralis major tendon.

VESSELS

a Axillary artery.
b Axillary vein.
c Posterior circumflex.
d Subscapular.
e Dorsalis scapulæ.
f Alar thoracic, very large and really forming an external mammary branch.
g Perforating branches of internal mammary.
h Long thoracic.
i Humeral branch of acromio-thoracic.
k Cephalic vein.

NERVES

1 Median.
2 Internal cutaneous.
3 Lesser internal cutaneous (Wrisberg).
4 Ulnar.
5 Musculo-spiral.
6 & 7 Internal muscular branches of musculo-spiral.
8 Internal cutaneous branch of musculo-spiral.
9 Circumflex.
10 Intercosto-humeral.
11 Middle or lower subscapular.
12 Long subscapular.
13 Lateral branches of the intercostal nerves.
14 Anterior branches of intercostal nerves.
15 Communication of nerve of Wrisberg with intercosto-humeral.
16 Posterior or long thoracic.
17 Upper branch of internal cutaneous to skin of arm.
18 Anterior division of lateral branch of second intercostal.

The axillary artery gives off a number of small branches which supply the areolar tissue and lymphatic glands in the axilla. These have been named alar thoracic, of which one is often enlarged, as in the plate, and, running across the space, supplies the outer border of the mammary gland, and is thus properly named the external mammary artery.

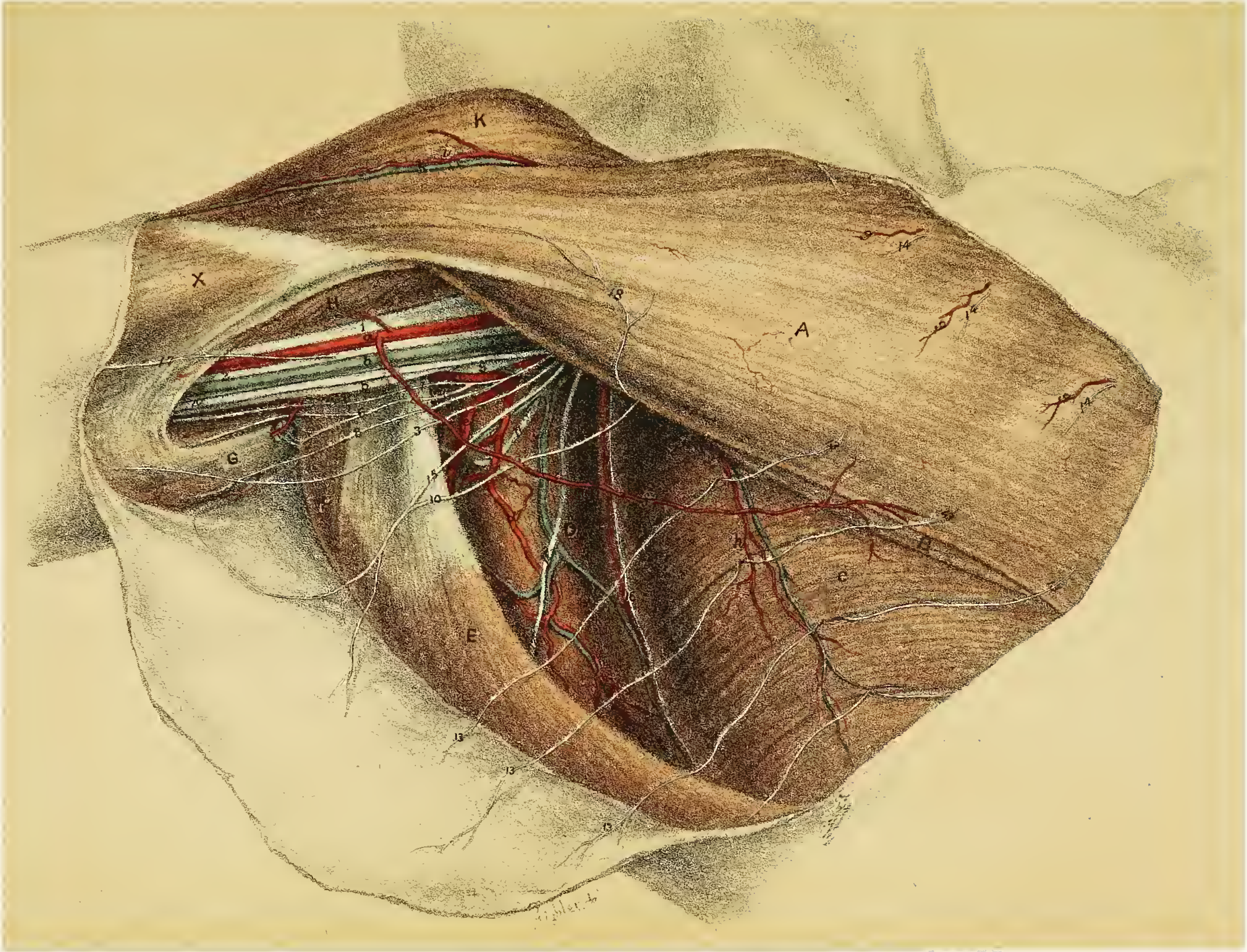


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PLATE II.

THE AXILLA, DEEP VIEW.

The pectoralis major has been cut across about its centre, and the ends turned inwards and outwards in order to expose the pectoralis minor and the deeper parts of the axilla. The costo-coracoid membrane was extremely thin, and was removed with the fibro-areolar tissue lying between its lower edge and the upper border of the pectoralis minor ; the sheath of the vessels was also removed. It is a deeper dissection of the same axilla, as in Plate I. The plate shows well the doubling up of the fibres of the *pectoralis major* at their insertion, the inferior fibres of origin being folded up so as to lie beneath the upper ones, thus having a higher insertion into the humerus along the outer border of the bicipital groove.

It also shows a fibrous intersection, not uncommonly found running between the *pectoralis minor* and the *coraco-brachialis* muscles from the tip of the coracoid process.

In this body the intercosto-humeral, instead of giving a branch to join the nerve of Wrisberg (6), receives one from it (16), the nerve of Wrisberg being much larger than usual.

The *costo-coracoid* membrane is a fibrous structure, varying much in thickness in different subjects, which is attached above to the borders of the inferior surface of the clavicle, thus enclosing the subclavius muscle. Its lower border is condensed into a fibrous band, the costo-coracoid ligament, which stretches between the cartilage of the first rib and the coracoid process. The membrane is stronger externally, forming a fairly strong band between the clavicle and the coracoid process. Its deep surface is blended with the sheath of the axillary vessels. This latter is funnel-shaped and derived from the deep cervical fascia covering the scaleni muscles.

The costo-coracoid ligament is a representative of the prolonged coracoid element seen in monotremes, etc. ; it frequently contains cartilage nodules. (Bland Sutton.)

PLATE II.

MUSCLES

A Pectoralis major, sternal origin.
A′ Pectoralis major, clavicular origin.[1]
A″ Pectoralis major, insertion.
B Pectoralis minor.
C Serratus magnus.
D Subscapularis.

E Latissimus dorsi.
E′ Tendon of latissimus dorsi.
F Teres major.
G Triceps, long head.
H Coraco-brachialis.
I Biceps, long head.

J Biceps, short head.
K Deltoid.
L Subclavius.
M Sterno-mastoid.
X Tip of coracoid process.
Z Sterno-clavicular joint.

VESSELS

a Axillary artery.
b Axillary vein.
c Superior thoracic.
d Acromio-thoracic trunk.
e Clavicular branch of *d.*

f Thoracic branch of *d.*
g Acromial branch of *d.*
h Humeral branch of *d.*
i Long thoracic.
k Subscapular.

l Dorsalis scapulæ.
m Anterior circumflex.
n Cephalic vein.

NERVES

1 Cords of brachial plexus seen *en masse* above pectoralis minor.
2 External or musculo-cutaneous.
3 Nerve to coraco-brachialis from outer cord.
4 Median.
5 Internal cutaneous.

6 Lesser internal cutaneous.
7 Musculo-spiral.
8 Ulnar.
9 Internal cutaneous branch of musculo-spiral.
10 Intercosto-humeral.
11 Middle or lower subscapular.

12 Long subscapular.
13 Posterior thoracic.
14 Internal anterior thoracic.
15 External anterior thoracic.
16 Communication from nerve of Wrisberg to intercosto-humeral.

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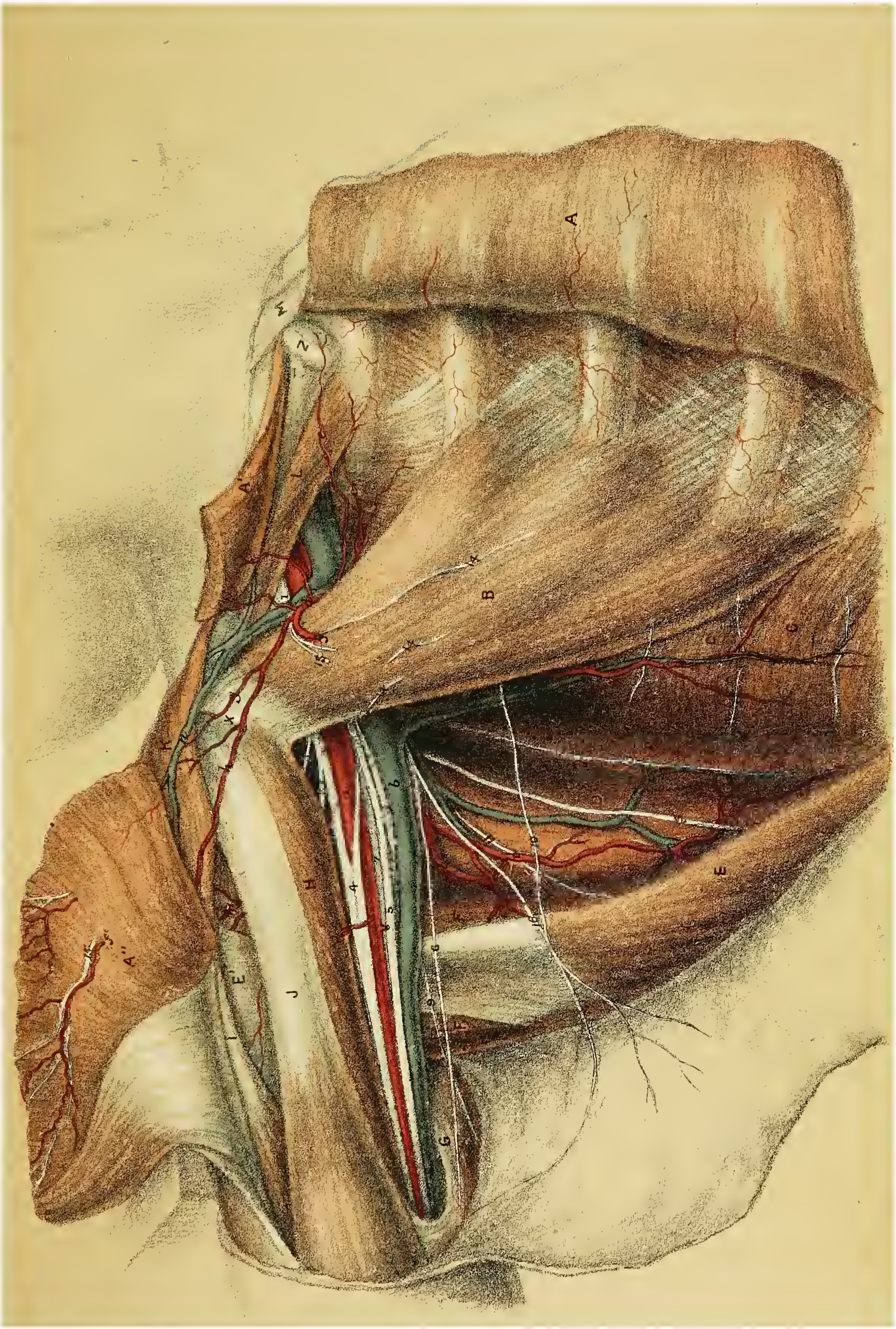
[1] The clavicular origin of the pectoralis major has been drawn a little too high on the anterior surface of the clavicle: it should properly occupy nearly the whole of the clavicular surface left exposed between it and the subclavius muscle.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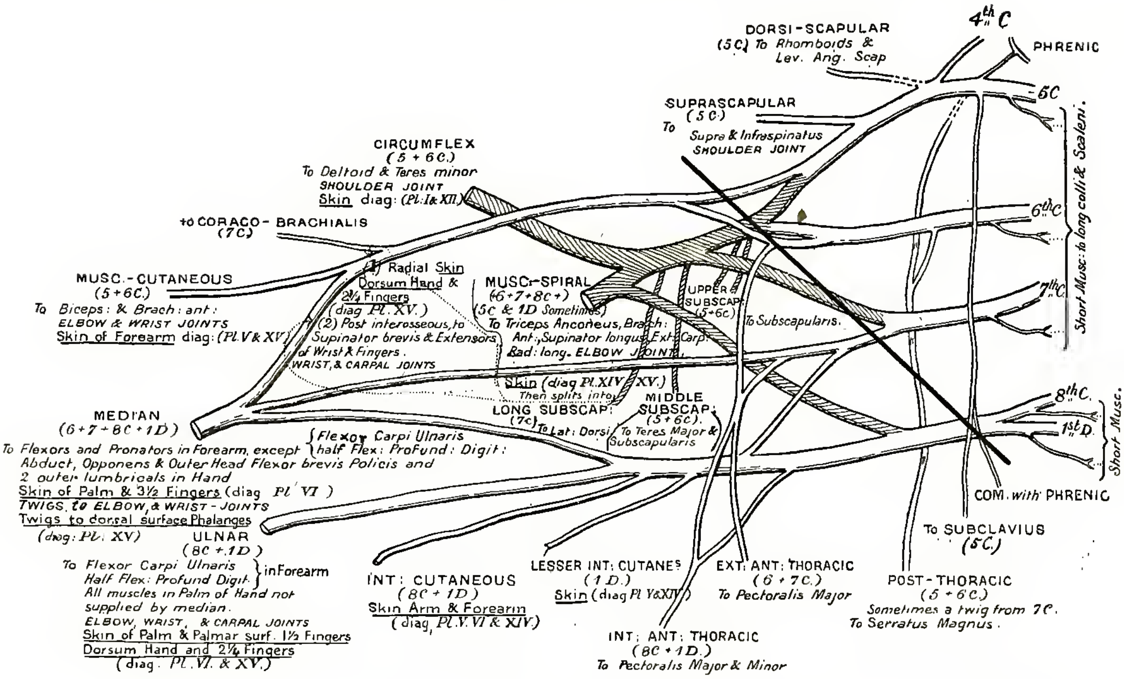
PLAN OF BRACHIAL PLEXUS AS EXISTING IN PLATE III.



(The long subscapular nerve may derive fibres from the 8 C, and the middle from the 7 C. The nerve to the coraco-brachialis came from the 6 C instead of the 7 C, its usual origin.) Both median and ulnar nerves send branches to the metacarpo-phalangeal and phalangeal joints of their respective fingers.

A SIMPLER PLAN OF BRACHIAL PLEXUS.

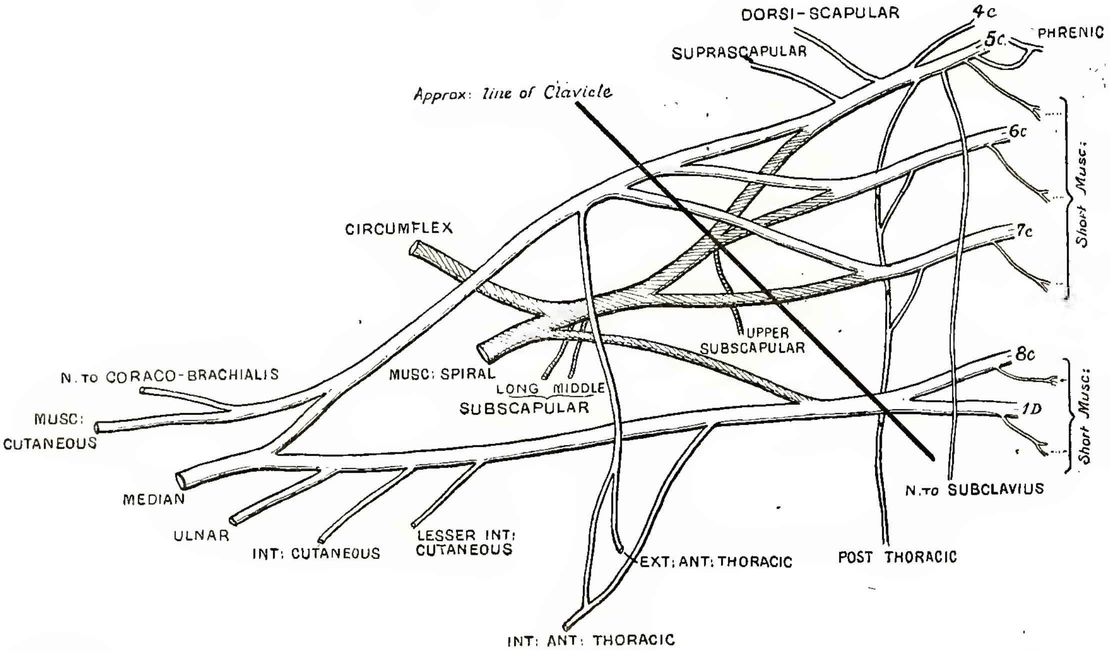


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PLATE III.

THE BRACHIAL PLEXUS.

This plate illustrates a deep dissection of the axilla and the lower part of the posterior triangle of the neck.

The middle third of the clavicle has been removed and the subclavius muscle divided; the weight of the limb has carried it backwards, exposing and tensing the cords of the brachial plexus.

The posterior scapular artery arises in this instance from the third part of the subclavian artery: this happens in *about* 40 per cent. of the bodies examined, and thus may be given as one of its normal modes of origin; otherwise, it is usually said to arise from the transversalis colli of the thyroid axis.

The brachial plexus in the plate differs a little from that usually taught, for the anterior branch of the seventh cervical sends a twig to the inner cord of the plexus; this can be traced almost entirely into the median nerve, of which it is really an aberrant root; while the remainder, instead of joining the outer cord, received a communicating branch from it, and ran on by itself to join the median.

The external anterior thoracic arose from the sixth and seventh cervical by two distinct roots, and not from the outer cord as is usually given.

Annexed are two diagrams: the first is a plan of the plexus delineated in the plate; the second is a simpler form which agrees in most points with those usually described as normal. In the first, underneath each nerve, is written the number of the spinal nerve from which its fibrils are normally derived, and also the main distribution to muscles, joints, and skin. The muscles are written in sloping small letters, the joints in sloping capitals, and the skin in upright small letters also being underlined.

The posterior divisions of the nerves and posterior cord are shaded.

PLATE III.

MUSCLES

A Pectoralis major.
B Pectoralis minor.
C Subclavius.
D Serratus magnus.
D′ Serratus magnus, insertion into the inferior angle of scapula.
E Subscapularis.
F Latissimus dorsi.
G Teres major.
H Triceps (long head).
I Short head of biceps.
K Coraco-brachialis.
L Long head of biceps.
M Deltoid.
N Trapezius.
O Omo-hyoid (posterior belly).
P Scalenus medius.
R Levator anguli scapulæ.
S Sterno-mastoid.
T Origin of coraco-brachialis and biceps from the coracoid process.
V External intercostal.
W Internal intercostal.
X Clavicle.
Y Coracoid process.

VESSELS

a Subclavian artery. ✓
b Subclavian vein. ✓
c Axillary artery. ✓
d Axillary vein. ✓
e[1] Brachial artery. ✓
f Posterior scapular coming off from the third part of subclavian. ✓
g Cephalic vein (cut end of). ✓
h Suprascapular. ✓
i Acromio-thoracic trunk. ✓
k Long thoracic arising in common with *l*.
l Subscapular.
m Dorsalis scapulæ.
n Anterior circumflex.
o Posterior circumflex.
p Muscular branch to coraco-brachialis.
r Superior thoracic.
s External jugular vein.
t Junction of posterior scapular and suprascapular veins with subclavian.

NERVES

1 Branch from fourth cervical to brachial plexus.
2 Fifth cervical
3 Sixth cervical
4 Seventh cervical
5 Eighth cervical
6 First dorsal
} Roots of the brachial plexus.
7 Outer cord.
8 Posterior cord.
9 Inner cord.
10 Circumflex.
11 Musculo-spiral.
12 Musculo-cutaneous.
13 Median.
14 Ulnar.
15 Internal cutaneous.
16 Lesser internal cutaneous.
17 Suprascapular.
18 External anterior thoracic.
19 Internal anterior thoracic.
20 Communicating branch from 18 to 19.
21 Posterior thoracic.
22 Lateral cutaneous of first intercostal (rare).
23 Lateral cutaneous of second intercostal (intercosto-humeral).
24 Lateral cutaneous of third intercostal.
25 Nerve to subclavius.
26 Branch from 25 to phrenic.
27 Dorsi-scapular.
28 Nerve to coraco-brachialis.
29 Upper subscapular nerve.
30 Middle subscapular nerve.
31 Long subscapular nerve.

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[1] This letter is placed a trifle higher upon the vessel than it should be; the brachial artery commences at the lower border of the latissimus dorsi tendon.

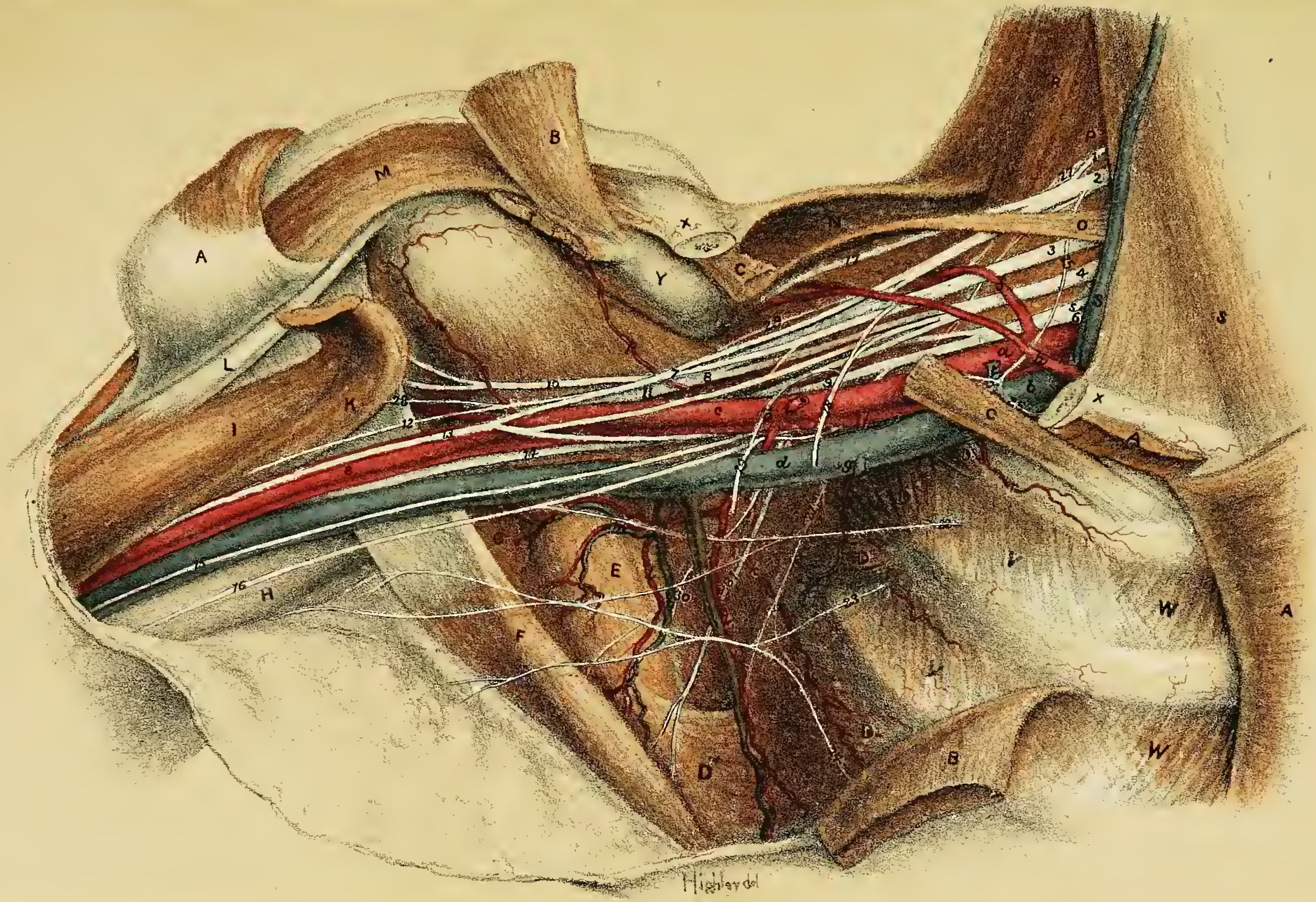

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PLATE IV.

THE BEND OF THE ELBOW.

In this plate is delineated the arrangement of the superficial veins and cutaneous nerves at the bend of the elbow; the basilic vein has been afterwards traced up to the point where it pierces the deep fascia to join the venæ comites of the brachial artery.

The common arrangement of these veins is as follows:—the *median* vein (*a*), which begins in radicals over the ball of the thumb, runs up the middle of the forearm, and divides into two about the lower border of the bicipital fascia—an inner branch, the *median basilic* (*e*), and an outer, the *median cephalic* (*b*)—giving off a branch (*k*) which pierces the deep fascia of the arm to join the deep veins. The *median cephalic* is joined just above the outer condyle by the *radial* vein (*c*), which begins in radicals upon the dorsal aspect of the first interosseous space, and runs up the outer side of the forearm posteriorly, turning forwards at the elbow to join the median cephalic. The conjoined vein is then termed *cephalic* (*d*); it runs up along the outer side of the biceps, piercing the fascia opposite the insertion of the deltoid, and, coursing up between this muscle and the pectoralis major, it pierces the sheath of the axillary vessels, and opens into the third portion of the axillary vein. It may communicate with the external jugular by means of a branch passing over the clavicle. The *median basilic*—the inner and usually the larger branch—is joined by the *anterior* (*h*) and *posterior ulnar* veins (*g*), either separately or conjointly, opposite the internal condyle; it is then called the *basilic* vein, and, running up the inner side of the arm, pierces the fascia about the middle, joining the venæ comites of the brachial to form the axillary vein. The anterior ulnar vein begins in radicals over the hypothenar eminence (the ball of the little finger), while the posterior begins in radicals upon the dorsal aspect of the fourth interosseous space, receiving the vein of the little finger (vena salvatella).

The arrangement of these veins may be likened to an ornamental M, but this is not always well marked.

PLATE IV.

MUSCLES

A Placed on the deep fascia of the arm over the biceps muscle.
B Placed on the semilunar or bicipital fascia.
C Deep fascia of the forearm.
X Position of the lowest superficial lymphatic gland in upper limb.

VESSELS

a Median vein.
b Median cephalic.
c Radial vein.
d Cephalic vein.
e Median basilic.
f Ulnar veins, common trunk.
g Posterior ulnar veins.
h Anterior ulnar vein.
k Communication of median with deep veins.
l Basilic vein.

NERVES

1 Internal cutaneous, anterior division.
2 Internal cutaneous, posterior division.
3 External cutaneous.
4 Posterior branch of external cutaneous.
5 Upper external cutaneous branch of musculo-spiral.
6 A twig from the internal cutaneous, supplying the skin in front of biceps.
7 Nerve of Wrisberg.

It may be taken as a general rule that the external cutaneous nerve passes beneath the median cephalic vein, and that one or two branches of the internal cutaneous nerve usually pass over the median basilic, while the others pass beneath it.

It is important to remember that the median basilic vein is only separated by the bicipital fascia from the brachial artery which lies beneath it; and thus, in the olden days when bleeding was the fashion, the artery was frequently injured, and arterio-venous aneurisms were not uncommon.

Supra-condyloid lymphatic gland.—This, the lowest lymphatic gland (or glands) in the arm, is placed about an inch above the internal condyle, along the course of the basilic vein; it receives all the lymphatics from the ulnar side of the forearm and fingers, and most of those from the radial; some lymphatics from the latter, however, running up along the cephalic vein to reach the glands in the axillary space.

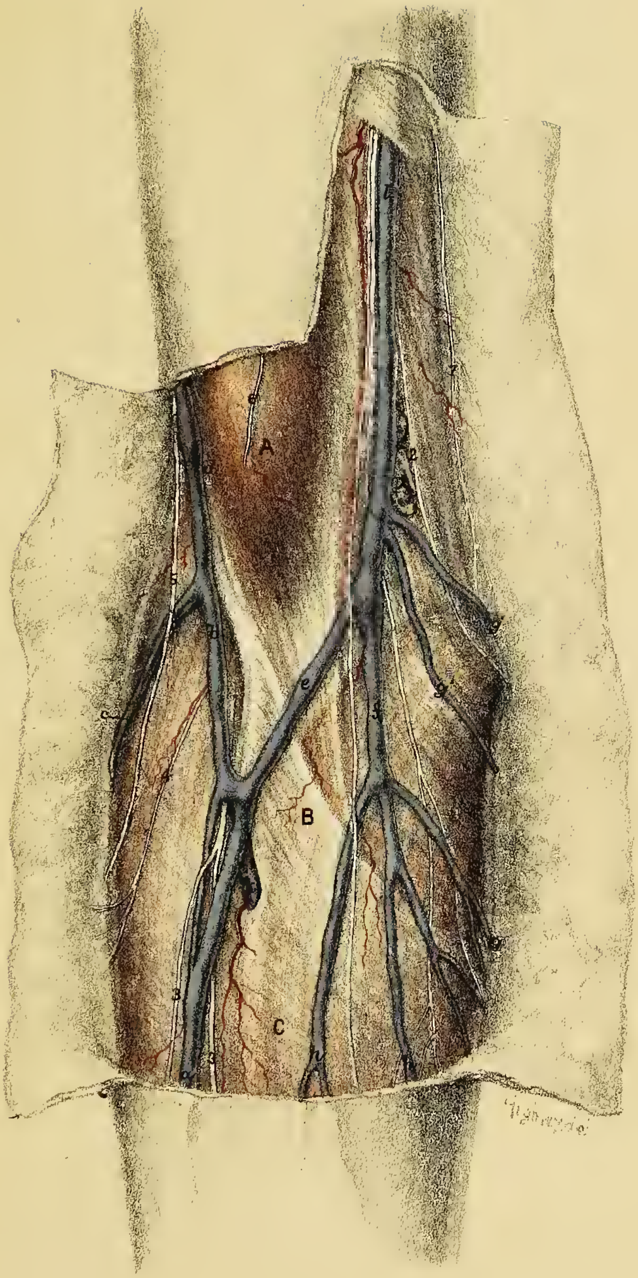

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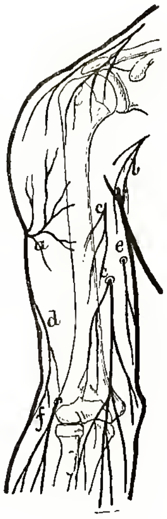
PLATE V.

THE INNER VIEW OF ARM AND BRACHIAL ARTERY.



The cutaneous nerves of the front of the arm are (*a*) circumflex; (*b*) intercosto-humeral, just along the anterior fold of the axilla; (*c*) the internal cutaneous, a branch of which pierces the fascia above the main nerve; (*d*) the upper external cutaneous branch of the musculo-spiral; (*e*) the lesser internal cutaneous; (*f*) the external cutaneous.

The *inferior profunda* artery is occasionally absent, and is also very variable in size and origin, and may arise in conjunction with the superior profunda, then running down with the ulnar nerve. In the plate it is shown arising by two trunks, one which has been called the inferior profunda (*f*) (firstly because it arises from about the normal place of origin, and secondly because it pierces the internal intermuscular septum), the other which is called an accessory branch (*e*), and arises from the superior profunda.

Another branch of the brachial, the *vas aberrans*, 'usually present, but often as a minute vessel, not admitting complete injection, arises close to or with the superior profunda, and descends over the median nerve supplying the biceps. Its downward continuation, when present, joins either the radial artery, or more rarely the ulnar, and may be minute, moderate or large enough to replace, or simulate the brachial, which then appears to overlie the median nerve. When of moderate size, it may replace the brachial origin of the radial (rarely the ulnar), giving rise to the common condition called high bifurcation of the brachial.' (Macalister.)

Note on the Coraco-brachialis.—Professor Wood[1] has shown that in mammals this muscle consists of three portions:—1. The coraco-brachialis brevis, represented in man by a fibrous arch, rarely by muscle, arising from the coracoid process and inserted into the humerus just below the subscapularis. 2. The coraco-brachialis medius, or the coraco-brachialis of man. 3. The coraco-brachialis longus arises with the medius, being connected at its origin with the pectoralis minor, and passes down internal to it to join the internal intermuscular septum, in which it is usually traceable as far as the internal condyle. It is usually represented in man by a fibrous band passing from the lower part of the muscle to the intermuscular septum. The coraco-brachial apparatus is found best developed in those animals 'which use the fore limbs for prehension, climbing, swimming, digging, etc., and appears to refer more to the wants and habits, than the pedigree or relationship of the animal.' The musculo-cutaneous nerve may either pierce the medius, or more usually it passes between the medius and longus.

---

[1] *Journ. of Anat. and Phys.* vol. i.

PLATE V.

MUSCLES

A Pectoralis major.
B Biceps, long head.
C Biceps, short head.
D Coraco-brachialis.
E Teres major.
F Latissimus dorsi.
G Triceps, long head.
H Triceps, internal head.
I Brachialis anticus.
K Pronator radii teres.
L Bicipital fascia.
X Internal intermuscular septum.

VESSELS

a Axillary artery.
b Axillary vein.
c Brachial artery.
d Superior profunda.
e An accessory branch, arising with superior profunda, and running down with the ulnar nerve to inosculate with the inferior profunda.
f Inferior profunda.
h Anastomotica magna.
k Junction of basilic vein with venæ comites of brachial.

NERVES

1 Median.
2 Internal cutaneous.
3 Ulnar.
4 Lesser internal cutaneous.
5 Musculo-spiral.
6 Ulnar collateral branch of 5.
7 Internal muscular branch of 5.
8 Internal cutaneous branch of 5.
9 Branch of median to pronator radii teres.

This plate shows how completely the brachial artery may be overlapped in the middle of its course by the edge of the biceps muscle; this should be borne in mind in ligation of the artery. The subject was a fairly muscular man of thirty years.

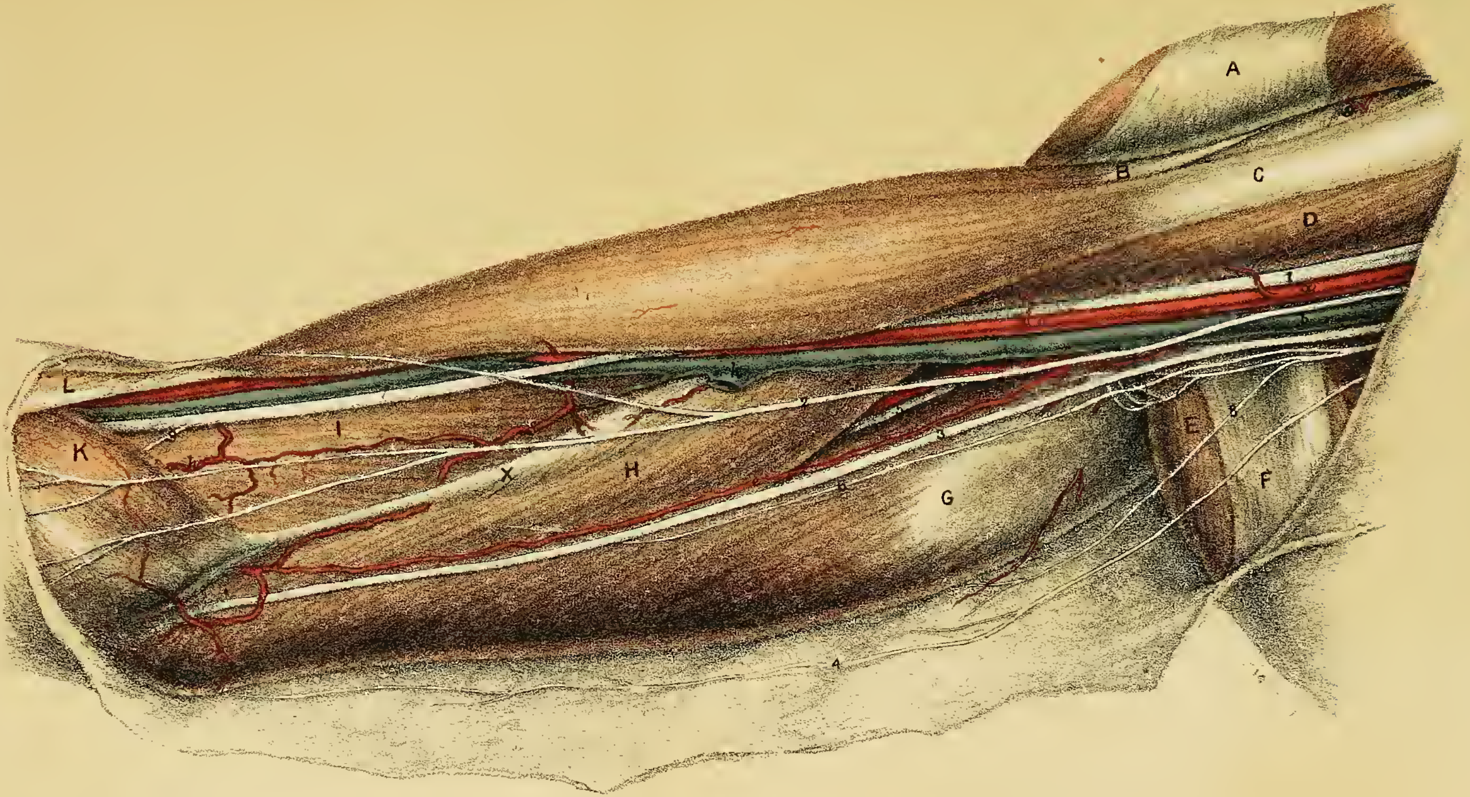

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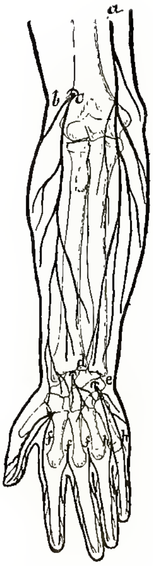
PLATE VI.

THE FRONT OF THE FOREARM, FIRST VIEW.

This is a superficial dissection of the muscles on the front of the forearm. The bicipital fascia was left to show how it braces the muscles together, and in a muscular subject has a constricting influence upon the contour of the inner side of the forearm. The external cutaneous nerve was not cleared away with the other subcutaneous structures, in order to show its communication with the radial; but it must be remembered that, although it appears to lie upon the muscles, yet it is separated from them by the deep fascia of the forearm which has been removed.

The accompanying sketch shows the cutaneous nerve-supply of the anterior surface of the forearm and hand: (*a*) Internal cutaneous; (*b*) posterior branch of external cutaneous; (*c*) external cutaneous; (*d*) palmar cutaneous of the median; (*e*) palmar cutaneous of the ulnar; (*f*) digital branches of the median; (*h*) digital branches of the ulnar.



The *palmaris longus* is one of the most variable muscles in the body, and may be absent, being then replaced by a fibrous band which occupies the normal position of the muscle.

PLATE VI.

MUSCLES

A Biceps.
B Brachialis anticus.
C Triceps.
D Supinator longus.
E Extensor carpi radialis longior.
F Pronator radii teres.
G Flexor carpi radialis.
H Palmaris longus.
I Flexor sublimis digitorum.
K Flexor carpi ulnaris.
L Flexor longus pollicis.
M Tendon of extensor ossis metacarpi pollicis.
N Tendon of extensor primi internodii pollicis.
O Pronator quadratus.
X Bicipital fascia.
Z Lower end of radius.

VESSELS

a Brachial artery.
b Venæ comites of brachial.
c Anastomotica magna.
d Communicating branch between superficial and deep veins.
e Radial artery.
f Anterior carpal.
g Superficialis volæ.
h Ulnar artery.

NERVES

1 Median.
2 Branch of median to pronator radii teres.
3 External cutaneous.
4 Radial.
5 Branch of communication between radial and external cutaneous.
6 Palmar cutaneous branch of median.
7 Ulnar.

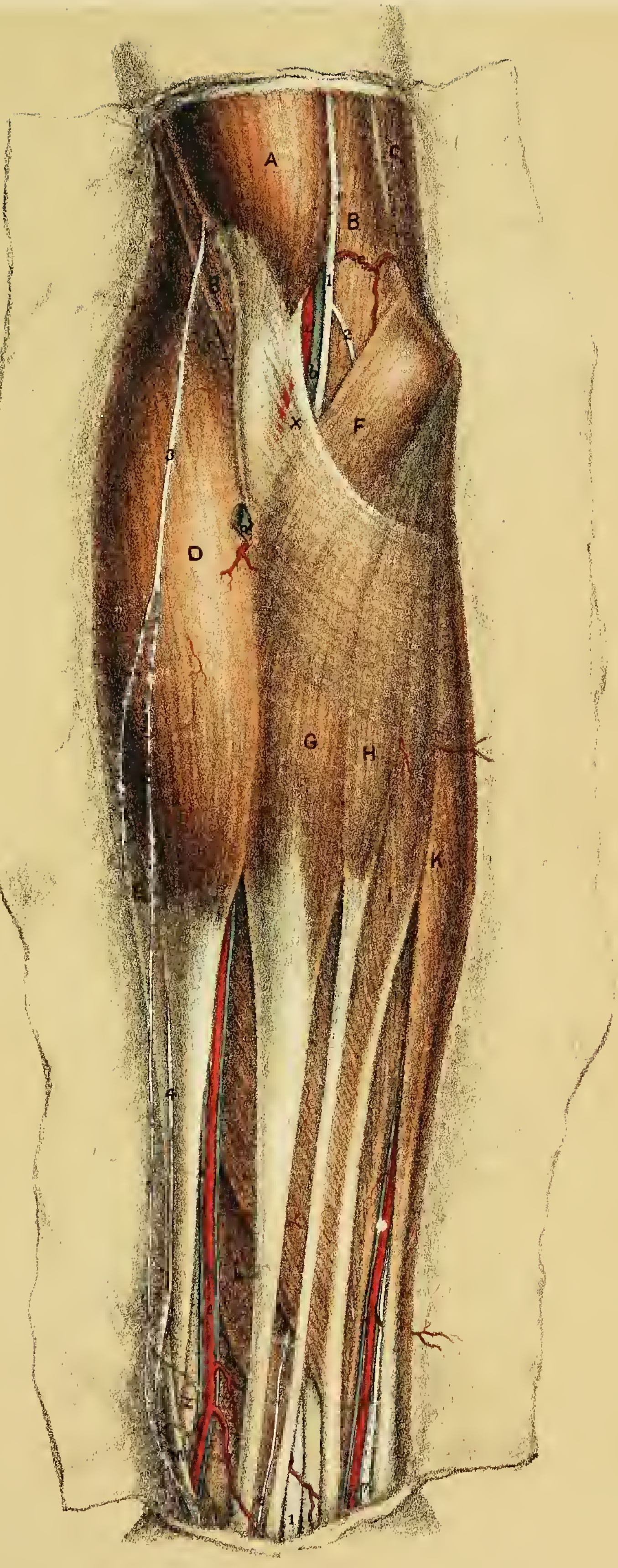

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PLATE VII.

FRONT OF FOREARM, SECOND VIEW.

This is a deeper view of Plate VI. from the same arm. The palmaris longus and flexor carpi radialis have been cut away to show the flexor sublimis digitorum ; and the inner edge of the supinator longus pulled a little outwards in order to expose the radial artery in the whole of its course in the forearm, and also the extensor carpi radialis longior which lies beneath it.

PLATE VII.

MUSCLES

A Biceps.
B Brachialis anticus.
C Triceps.
D Supinator longus.
E Extensor carpi radialis longior.
F Supinator brevis.
G Pronator radii teres.
H Palmaris longus.
H′ Tendon of palmaris longus, cut.
I Flexor carpi radialis.
I′ Tendon of flexor carpi radialis.
K Flexor sublimis digitorum.
L Flexor carpi ulnaris.
M Flexor longus pollicis.
N Pronator quadratus.
O Tendon of extensor ossis metacarpi pollicis.
P Tendon of extensor primi internodii pollicis.
Z Placed on the lower end of *radius*.

VESSELS

a Brachial artery.
b Anastomotica magna.
c Radial artery.
d Radial recurrent.
e Anterior terminal branch of superior profunda.
f Anterior carpal.
g Superficialis volæ.
h Ulnar artery.
i Muscular branch from ulnar to flexor carpi radialis and palmaris longus.

NERVES

1 Median.
2 Branch of median to pronator radii teres.
3 Branch of median to flexor carpi radialis and palmaris longus.
4 External cutaneous.
5 Musculo-spiral.
6 Radial.
7 Posterior interosseous.
8 Muscular branch of musculo-spiral to supply the extensor carpi radialis longior.
9 Palmar cutaneous of median.
10 Ulnar.

The branch of the musculo-spiral nerve which supplies the supinator longus was situated just out of sight along the outer side of the musculo-spiral trunk, and could not be indicated. It is shown in Plate XV.

PL. VII

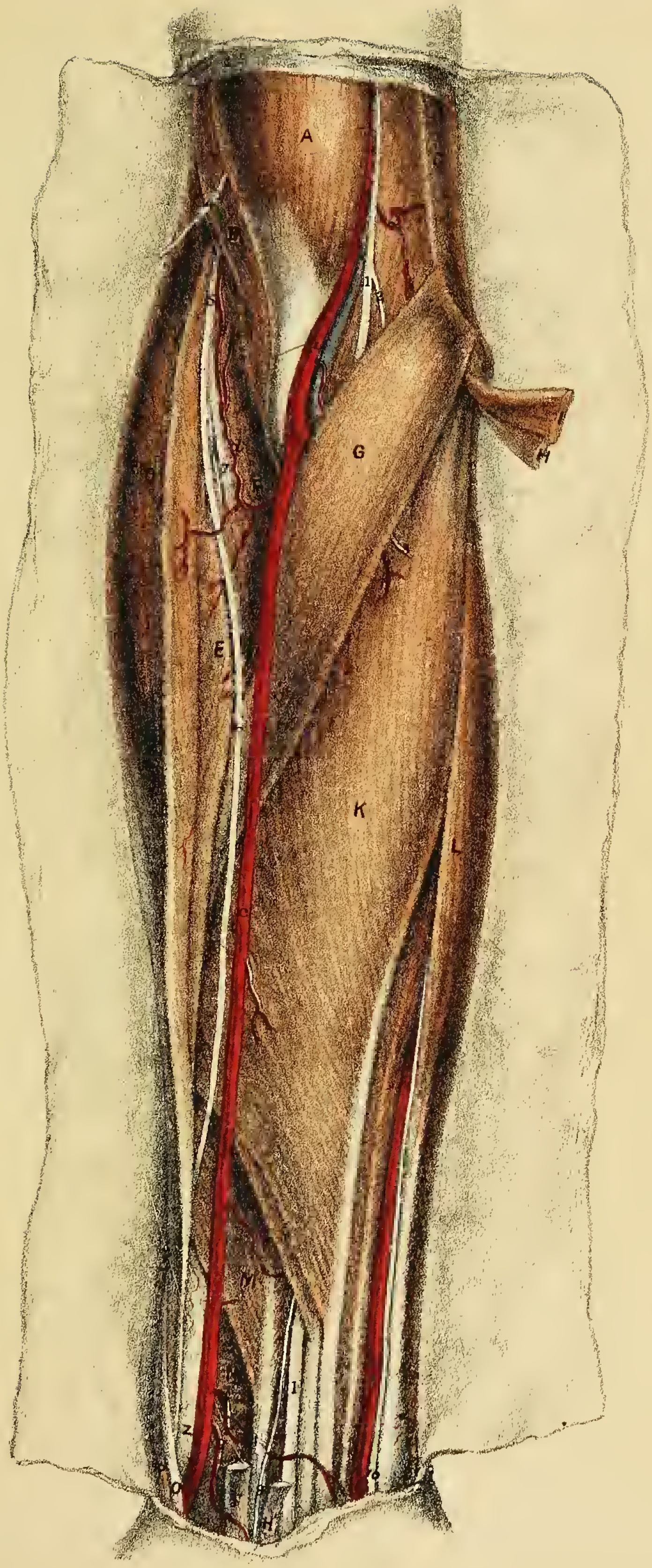

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PLATE VIII.

FRONT OF FOREARM, THIRD VIEW.

This shows a still deeper dissection of the front of the forearm. The flexor sublimis digitorum has been cut away from its radial origin, and its origin from the internal condyle, internal lateral ligament, and coronoid process turned inwards; its tendons have been cut short at the wrist, showing the order in which they pass under the annular ligament. The ulnar artery is thus also exposed with the deep layer of muscles. The relation of the median nerve to the ulnar artery is well shown as the nerve passes between the two heads of the pronator radii teres. If a comparison be made between the radial artery in Plate VII. and the ulnar in this plate, it will be clearly seen how superficial the radial lies and how easily it is reached by merely turning back the edge of the supinator longus, whilst the ulnar is placed deeply and is not nearly so accessible, lying as it does beneath the pronator and the flexor muscles arising from the internal condyle of the humerus.

Look out carefully for an occasional fusiform slip of origin of the flexor longus pollicis, which arises from the ulna just below the deep origin of the pronator radii teres, and runs down to join the ulnar border of the long flexor of the thumb. This is, according to Professor Macalister, the remains of the obsolete superficial flexor of the thumb.

After finishing this layer of muscles, cut away the flexores profundus digitorum and longus pollicis, and examine the pronator quadratus which lies beneath them covered in by a special fascia of transverse fibres, in which, towards the radial side, are usually to be seen a number of glistening longitudinal ones; they are the degenerate remains of a muscle called the flexor carpi radialis brevior (Wood), which in its fully developed state arises from the radius just above the pronator, and, passing down, is inserted into the second or third metacarpal bone, or, aborting, is attached to one of the carpal bones or fibrous tissue in front of the carpus.

PLATE VIII.

MUSCLES

A Biceps.
B Brachialis anticus.
C Triceps.
D Pronator radii teres, superficial origin.
E Pronator radii teres, deep origin.
F Flexor carpi radialis.
F′ Tendon of flexor carpi radialis.
G Palmaris longus.
G′ Tendon of palmaris longus.
H Flexor sublimis digitorum, origin from internal condyle, etc.
H′ Tendons of the flexor sublimis: i. index, ii. middle, iii. ring, iv. little finger.
I Radial origin of flexor sublimis digitorum.
J Flexor carpi ulnaris.
K Flexor profundus digitorum.
L Flexor longus pollicis.
M Supinator longus.
N Pronator quadratus.
O Extensor carpi radialis longior.
P′ Tendon of extensor ossis metacarpi pollicis.
R Tendon of extensor primi internodii pollicis.
X Placed over the edge of the trochlear surface of humerus, which is covered by the brachialis anticus.
Z Placed on the lower end of the radius.

VESSELS

a Brachial artery.
b Radial artery.
c Ulnar artery.
d Anastomotica magna.
e Radial recurrent.
f Anterior ulnar recurrent.
g Posterior ulnar recurrent.
h Anterior interosseous.
i Comes nervi mediani.
k Anterior carpal from radial.
l Superficialis volæ.

NERVES

1 Median.
2 Nerve to pronator radii teres from median.
3 Branch of median to flexor sublimis.
4 Branch of median to palmaris longus and flexor carpi radialis.
5 Anterior interosseous.
6 Branch of anterior interosseous to flexor profundus digitorum.
7 Branch of anterior interosseous to flexor longus pollicis.
8 Continuation of anterior interosseous to pronator quadratus.
9 Ulnar.
10 Branch of ulnar to flexor profundus digitorum.
11 Branch of ulnar to flexor carpi ulnaris.
12 Dorsal branch of ulnar.
13 Musculo-spiral.
14 Radial.
15 Posterior interosseous.
16 External cutaneous.
17 Palmar cutaneous of median.

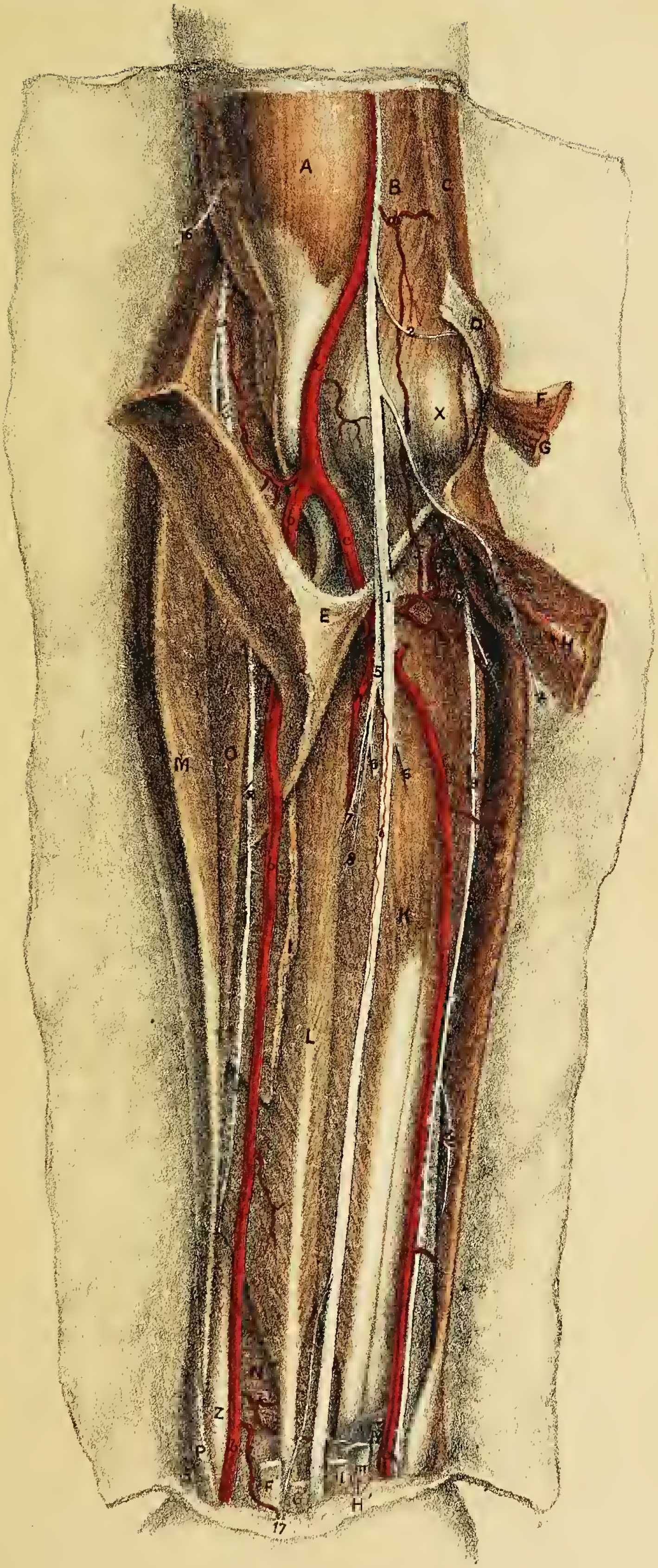
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PLATE IX.

THE PALMAR FASCIA.

This plate shows a superficial dissection of the lower part of the forearm, and palm of the hand. The tendon of the palmaris longus after perforating the deep fascia of the forearm is continued into the palmar fascia, which may be spoken of as an expansion of its tendon. The palmaris brevis which arises from its inner border is the remnant of the large muscular palmaris longus which exists in the armadillo, etc., and is there muscular in the whole of its extent.[1] The palmar fascia with the palmaris brevis is easily reflected from the underlying structures on the ulnar side of the hand, but on the radial side the fascia is bound down to the annular ligament at the point where it blends with the origin of the abductor and outer head of the flexor brevis pollicis.

The *palmar fascia*, as seen in the plate, is strong and triangular, being composed chiefly of longitudinal fibres, continuous above with those of the tendon of the palmaris longus, while below they divide into four digital slips which pass along the middle line of the finger, and are closely connected with the skin over the first phalanx. The four digital slips are tied together by transverse fibres, which are collected, opposite the metacarpo-phalangeal joint, into a well-marked bundle called the superficial transverse ligament; each slip also gives off from its deep surface two prolongations which descend on either side of the flexor tendons to be attached to the glenoid plates and edges of the metacarpal bone. An arch is thus formed through which the flexor tendons pass, while between the arches the digital nerves and arteries, and the lumbricals pass to their destination. 'It is the degenerate perforated flexor of the first phalanges.' (Macalister.)

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[1] For further information, see the *Morphology of Ligaments* by Mr. J. Bland Sutton.

PLATE IX.

MUSCLES AND FASCIÆ

A Tendon of the palmaris longus.
B Palmaris brevis.
C Palmar fascia.
D Deep fascia of the forearm.
E Placed over the pisiform bone.
F Annular ligament.
G Superficial transverse ligament.

VESSELS

a Ulnar artery.
b Superficialis volæ.
c Radialis indicis.
d Digital branches of the superficial palmar arch.
e Median vein.
f Anterior ulnar vein.

NERVES

1 Anterior division of the external cutaneous.
2 Anterior division of the internal cutaneous.
3 Ulnar.
4 Palmar cutaneous branches of the ulnar piercing the palmaris brevis and supplying it.
5 Palmar cutaneous branch of the median.
6 Digital branches of the ulnar.
7 Digital branches of the median.

N.B. In the plate the digital slip of the palmar fascia to the index finger is broader than is usually the case.

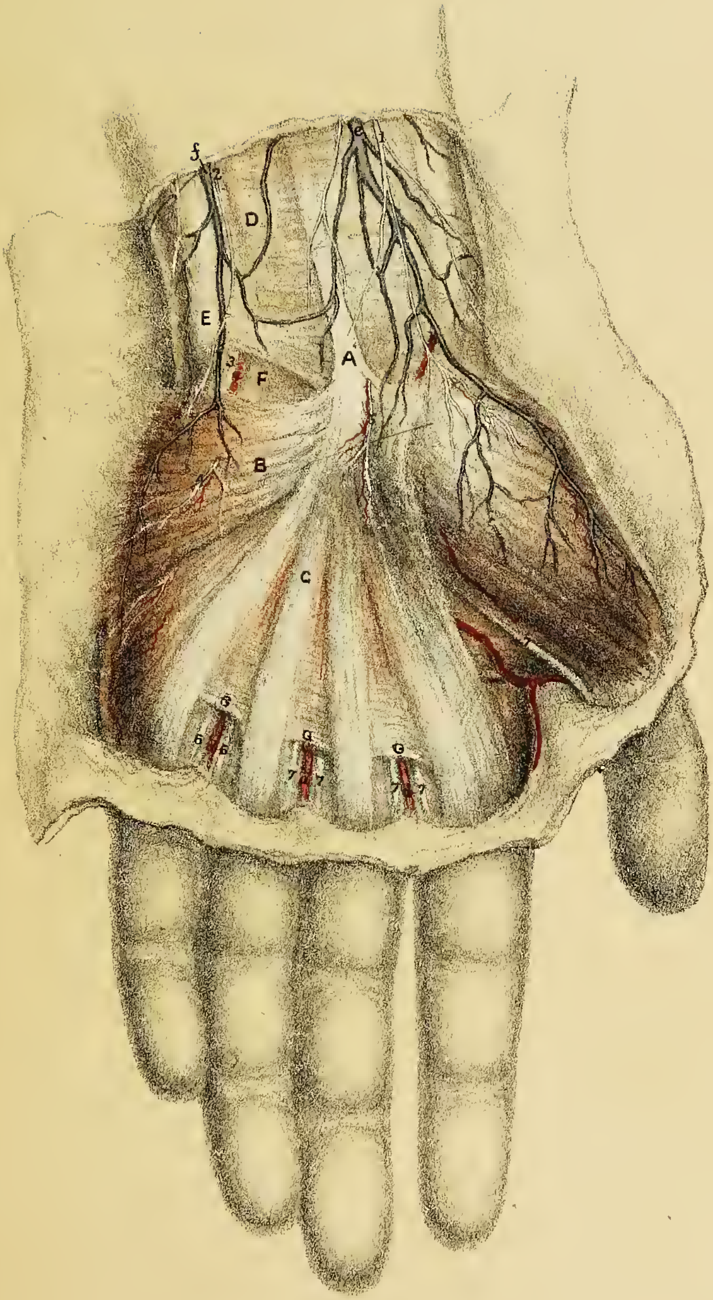
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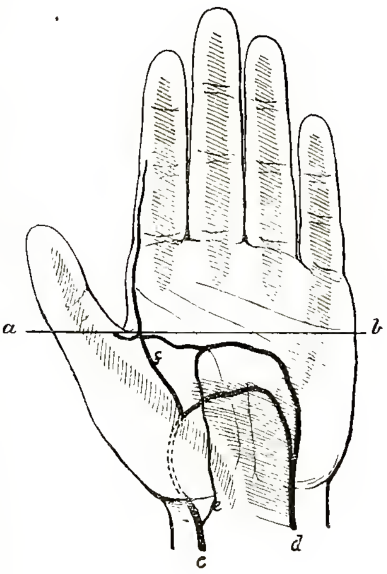
PLATE X.

SUPERFICIAL PALMAR ARCH, ETC.

In this dissection the palmaris brevis and the greater portion of the palmar fascia have been removed, leaving only the outer edge of the fascia to show where it blends with the origin of the abductor pollicis, and outer head of the flexor brevis pollicis.



The *superficial palmar arch* may be completed in three ways: (1) most commonly by the inosculation of the superficial branch of the ulnar with the radialis indicis of the radial; or (2) by inosculation with the superficialis volæ; *occasionally* (3) by both.

The position of the superficial arch may be marked on the palm, by extending the thumb and drawing a line *a b* from its web across the palm: this will indicate the summit of the arch. The deep palmar arch is generally about a finger's breadth higher up.

(In the outline the artist has not carried the superficial arch quite low enough down.)

(*c*) radial artery; (*d*) ulnar artery; (*e*) superficialis volæ; (*f*) radialis indicis.

The diagram also shows in shaded lines the common arrangement of the *synovial sheaths* of the tendons in the palm, and it will be seen that while the sheaths of the index, middle, and ring fingers are shut off from the common synovial membrane of the flexor tendons at the wrist, about the level of the metacarpo-phalangeal joint, that of the little finger is continuous with it; the flexor tendon of the thumb has, as a rule, a sheath to itself running down under the annular ligament, but in some cases communicating with the other sheath at the wrist.

Thus inflammation in the sheath of either the thumb or little finger has a clear path to spread down under the annular ligament, and may do a considerable amount of damage.

PLATE X.

MUSCLES

A Abductor pollicis.
B Flexor brevis pollicis, outer head.
C Adductor transversus pollicis.
D First dorsal interosseous (abductor indicis).
E Lumbricales.
F Abductor minimi digiti.
G Flexor brevis minimi digiti.
H Opponens or flexor ossis metacarpi minimi digiti.
I Flexor carpi ulnaris.
K Flexor sublimis digitorum tendons: ii. middle, iii. ring, iv. little finger.
L Flexor profundus digitorum.
M Palmaris longus.
N Flexor carpi radialis.
O Supinator longus.
P Extensor ossis metacarpi pollicis.
Q Extensor primi internodii pollicis.
R Pronator quadratus.
S Vaginal portion of sheath of flexor tendons.
S′ Crucial portion of sheath.
T Vinculum accessorium longum.
V Arch formed by deep prolongation of the palmar fascia.
X Annular ligament.
Z Pisiform bone.

VESSELS

a Radial artery.
b Superficialis volæ.
c Ulnar artery.
d Deep branch of ulnar.
e Digital branches of the superficial palmar arch.
f Radialis indicis.
g Princeps pollicis.
h Interosseous branches of the deep arch joining the digital at their point of bifurcation.

NERVES

1 Median.
2 Palmar cutaneous of median.
3 Digital branches of median.
4 Branch to muscles of thumb.
5 Branches to outer two lumbricales.
6 Ulnar.
7 Deep branch of ulnar.
8 Digital branches of ulnar.
9 Communication between ulnar and median.

PL. X

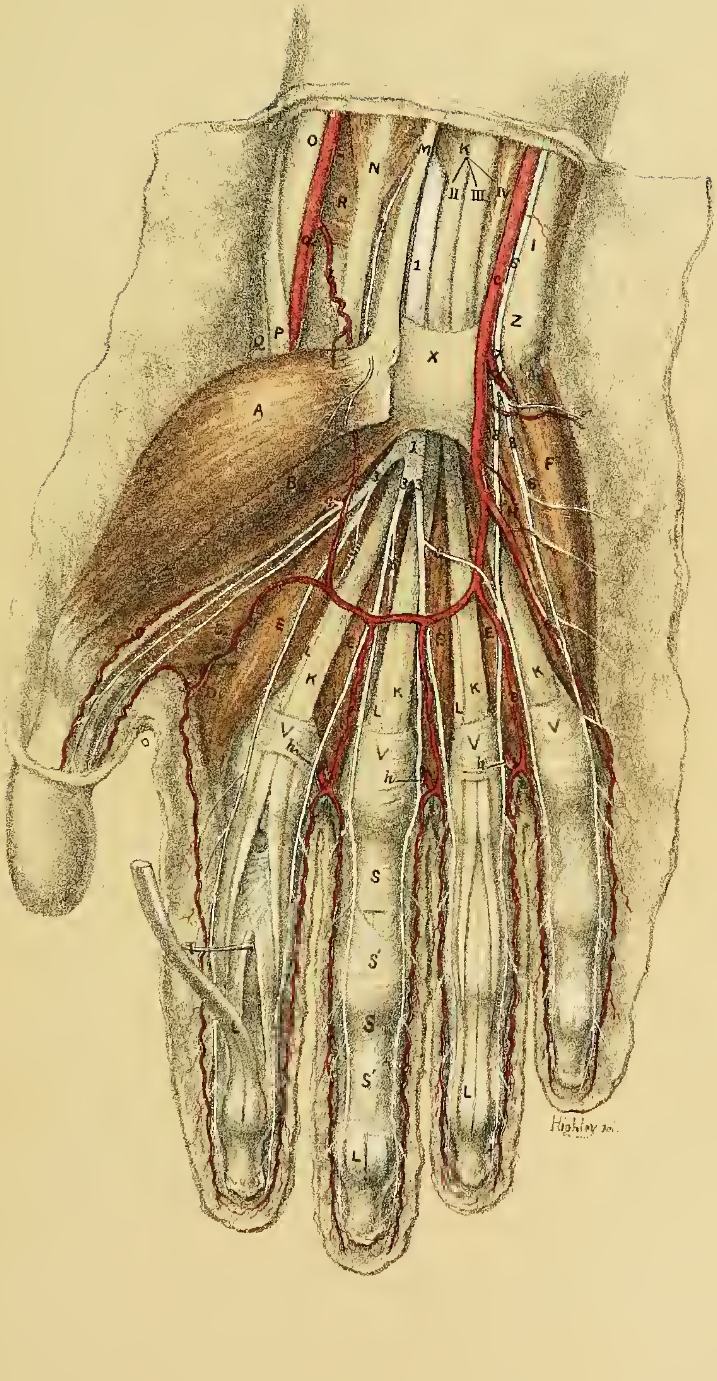

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PLATE XI.

THE DEEP PALMAR ARCH AND MUSCLES OF PALM.

In this dissection of the palm, the superficial arch, median nerve, flexor tendons, and lumbricales have been removed in order to show the deep arch. The annular ligament has also been divided, and the tendons cut off and left to show their relative position whilst passing under it.

Note on the Short Muscles of the Thumb.—The so-called inner head of the flexor brevis pollicis—at least, the part visible in the plate—is better named the adductor obliquus, because Von Bischoff has shown that the true inner head of this muscle is a small slip which arises from the base of the first metacarpal bone, and passes to be inserted into the ulnar sesamoid bone of the thumb; whereas the rest of the mass, which usually is known as the inner head of the flexor brevis, is in reality an oblique adductor, while the so-called adductor of Gray, etc., should be called the adductor transversus. A table can thus be established, comparing the muscles of the thumb with those of the great toe:—

Abductor pollicis with the abductor hallucis.
Adductor transversus pollicis with the adductor transversus hallucis (transversus pedis).
Adductor obliquus pollicis with the adductor obliquus hallucis (the ordinary adductor).
Flexor brevis pollicis with the flexor brevis hallucis.

a Radial head.	*a* Tibial head.
b Interosseus primus volaris.	*b* Fibular head.

The flexor ossis metacarpi (opponens) pollicis has no homologue in the human foot; it is really a segmentation of the outer head of the flexor brevis pollicis; but in the orang an opponens hallucis, which is closely connected with the flexor brevis hallucis, has been described. The interosseus primus volaris is the true ulnar head of the flexor brevis pollicis.

This classification is taken from a paper by Dr. Cunningham in the 'Report of the Challenger Expedition,' vol. v. p. 137, to which the reader must be referred for more information, as well as to an excellent paper by Dr. St. John Brooks in the *Journal of Anatomy and Physiology*, vol. xxii.

PLATE XI.

MUSCLES

A Abductor minimi digiti.
B Flexor brevis minimi digiti.
C Opponens or flexor ossis metacarpi minimi digiti.
D Abductor pollicis.
E Flexor brevis pollicis, outer head.
F Opponens or flexor ossis metacarpi pollicis.
G Adductor obliquus pollicis (inner head of flexor brevis pollicis).
H Adductor transversus pollicis.
I Dorsal interossei.
K Palmar interossei.
L Tendons of flexor sublimis digitorum: i. index, ii. middle, iii. ring, iv. little finger.
M Tendons of flexor profundus digitorum.
N Tendon of flexor longus pollicis.
O Cut edge of annular ligament.
P Lumbricales.
Q Deep transverse ligament, joining
R Glenoid plates.
X Placed on pisiform bone.
Y Placed on hook of unciform bone.
Z Anterior ligament of wrist joint.

VESSELS

a Ulnar artery.
b Deep branch of ulnar.
c Deep palmar arch.
d Interosseous branches of deep arch.
e Digital branches of superficial arch.
f Radialis indicis.
g Princeps pollicis.
h Recurrent branch of deep palmar arch.

NERVES

1 Ulnar.
2 Deep branch of ulnar.
3 Muscular twigs to two inner lumbricales.
4 Muscular twig to third palmar interosseous.

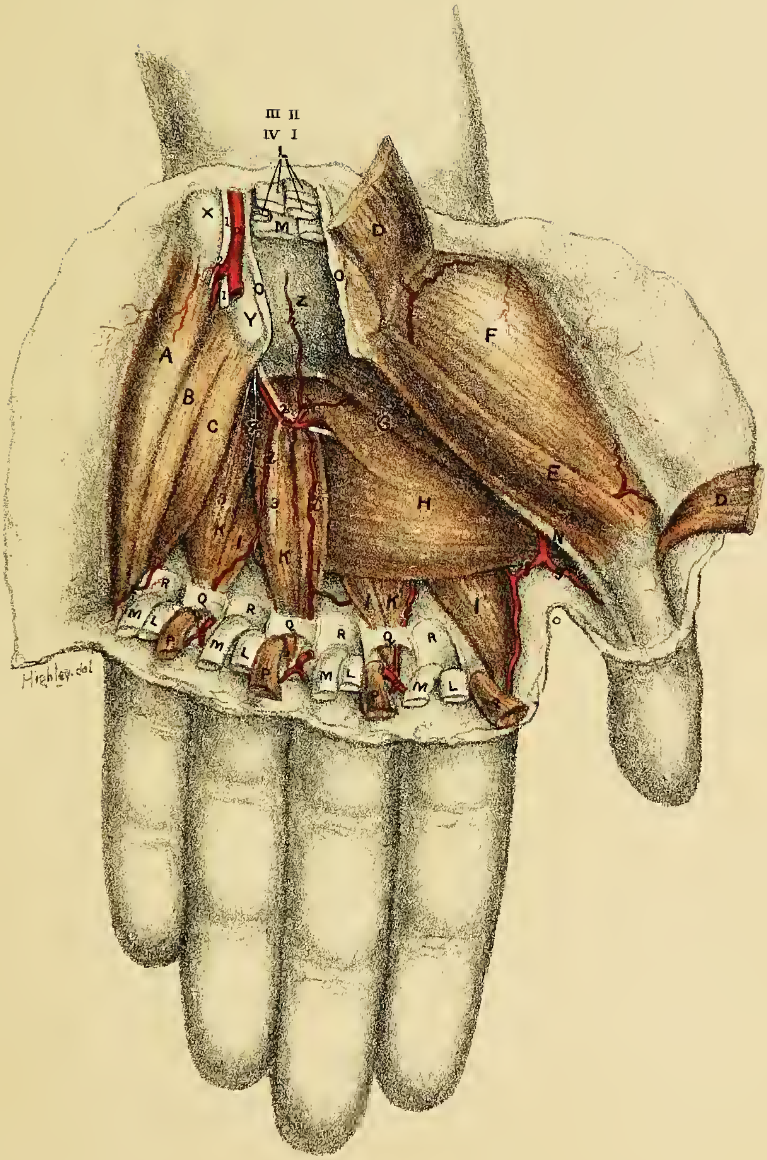
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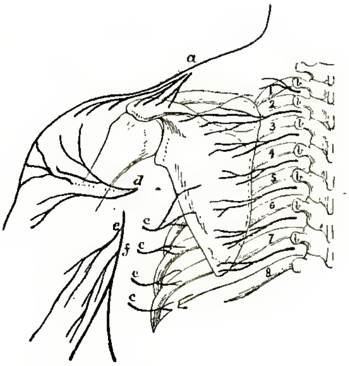
PLATE XII.

THE BACK OF SHOULDER.



This plate shows a superficial dissection of the muscles at the back of the shoulder, and also the nerves and vessels of the arm from behind, the arm having been strongly rotated inwards.

The cutaneous nerves which supply this region are :—(*a*) Acromial branches of the third and fourth cervical nerves ; (*b*) cutaneous branches of the posterior primary divisions of the spinal nerves ; (*c*) posterior twigs of the lateral branches of the intercostals ; (*d*) circumflex ; (*e*) internal cutaneous branch of musculo-spiral ; (*f*) intercosto-humeral.

The internal cutaneous branch of the musculo-spiral, as shown in the plate, was smaller than usual, and only supplied the skin about half-way down the back of the arm instead of nearly reaching the olecranon, as generally described. The branches of the intercosto-humeral, on the other hand, were large, and supplied the skin nearly down to the olecranon. The usual branch of communication between the intercosto-humeral and internal cutaneous of the musculo-spiral could not be found.

There is generally a fibrous band uniting the tendon of the latissimus dorsi and the scapular head of origin of the triceps, which is the remains of a muscle—the dorsi-epitrochlearis.

PLATE XII.

MUSCLES

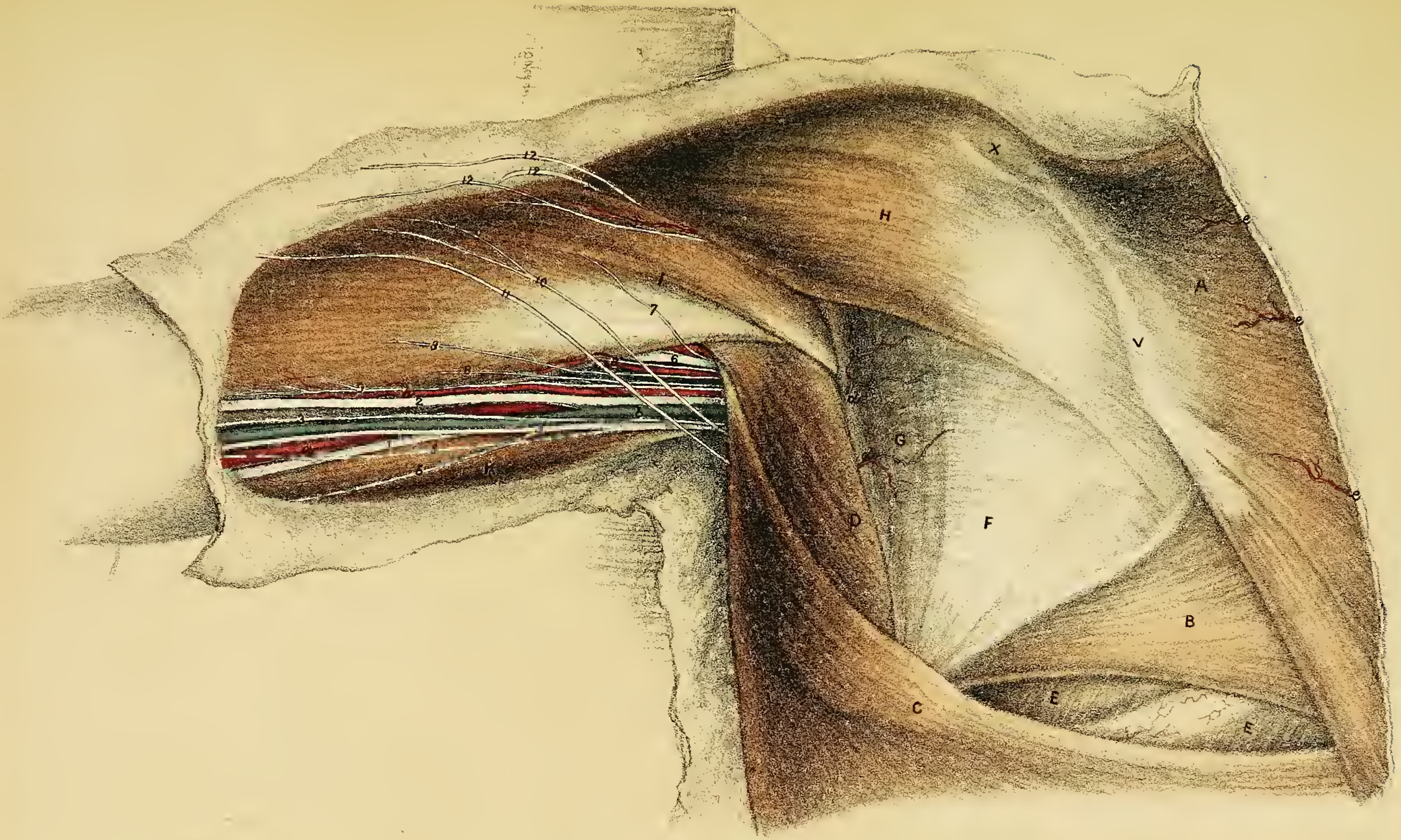
A Trapezius.
B Rhomboideus major.
C Latissimus dorsi.
D Teres major.
E External intercostals.
F Placed on fascia covering in the infraspinatus.
G Placed on fascia covering in the teres minor.
H Deltoid.
I Triceps (long head).
K Biceps.
V Placed on spine of scapula.
X Placed on acromion process.

VESSELS

a Brachial artery.
b Axillary vein.
c Superior profunda artery.
d Branches of dorsalis scapulæ.
e Branches from the dorsal divisions of intercostals.
f Cutaneous branch from the posterior circumflex artery.
h Inferior profunda artery coming off rather higher than usual from the brachial.

NERVES

1 Median.
2 Ulnar.
3 Lesser internal cutaneous.
4 Internal cutaneous.
5 Upper branches of the internal cutaneous.
6 Musculo-spiral.
7 Internal cutaneous branch of the musculo-spiral.
8 Internal muscular branches of the musculo-spiral.
9 Ulnar collateral: *vide* Plate I.
10 and 11 Branches of the intercosto-humeral.
12 Cutaneous branches of the circumflex.



Dissected by [illegible] Brodie

PLATE XIII.

THE CIRCUMFLEX NERVE AND SCAPULAR QUADRILATERAL.

In this dissection the attachment of the deltoid to the spine of the scapula has been cut through and the spine sawn across at its junction with the acromion process; the whole muscle and bone were then turned outwards, to expose the circumflex nerve and posterior circumflex artery.

When viewed from the back, with the arm abducted from the side, the quadrilateral space or scapular quadrilateral is formed by the bone above, the long head of the triceps below, externally by the teres major, and the teres minor internally; but seen from the front, the teres minor is replaced by the axillary border of the subscapularis. Coming through the space are the posterior circumflex vessels and circumflex nerve.

The branch of the circumflex artery marked (*g*) passes down to anastomose with one from the superior profunda, and it is this branch that usually enlarges and takes the place of the circumflex when, in abnormal conditions, that artery is not given off from the axillary, or *vice versâ.*

The circumflex nerve is a good illustration of Hilton's law, that the main nerve to a joint not only supplies it, but also some of the muscles which act on the joint, as well as the skin over those muscles, thus securing during movement the true balance of force and friction.

The fibres of origin of the infra-spinatus from the spine of the scapula overlap the upper portion of the origin from the infra-spinous fossa.

PLATE XIII.

MUSCLES

A Levator anguli scapulæ.
B Rhomboideus minor.
C Rhomboideus major.
D Latissimus dorsi.
E Teres major.
F Teres minor.
G Infra-spinatus.

H Supra-spinatus.
I Trapezius.
K Deltoid.
L Triceps, external head.
M Triceps, long head.
N Fascia over infra-spinatus.

O Smooth surface at base of spine for trapezius to glide over.
V Under surface of acromion process.
X Placed on shaft of humerus.
Y Coraco-acromial ligament.
Z Placed on great tuberosity of humerus.

VESSELS

a Posterior circumflex artery.
b Posterior circumflex vein.
c Dorsalis scapulæ artery and vein.

d A descending branch of the dorsalis scapulæ.

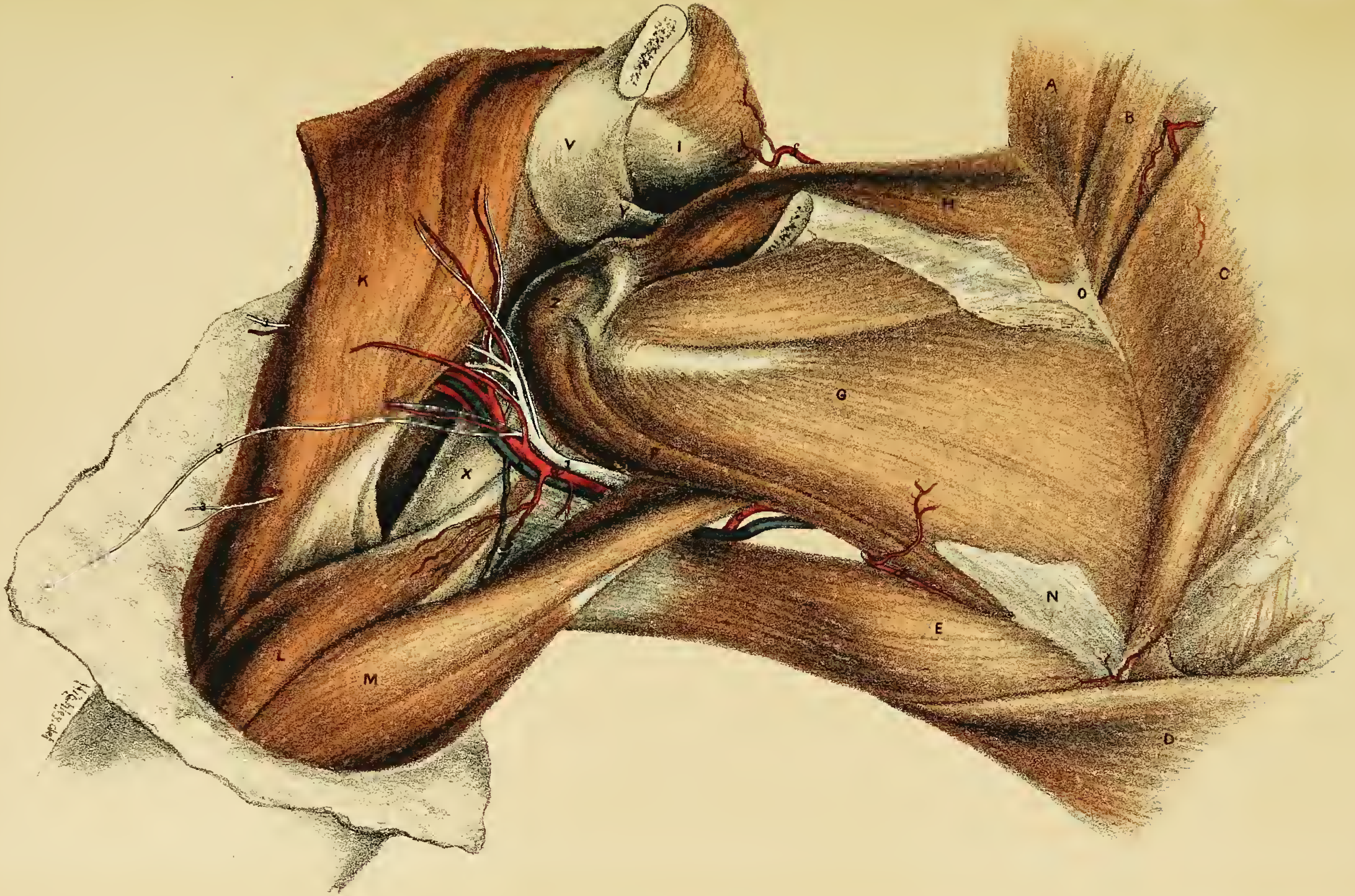
e A branch of the posterior scapula.
f Suprascapular artery.

NERVES

1 Circumflex.
2 Its branch to teres minor.

3 Cutaneous branches coming off from the circumflex.

The branch of the circumflex nerve to the teres minor has usually an enlargement upon it, called a ganglion; it is only, however, a thickening of the perineurium.



Berjeau & Highley lith

Dissected by C G Brodie

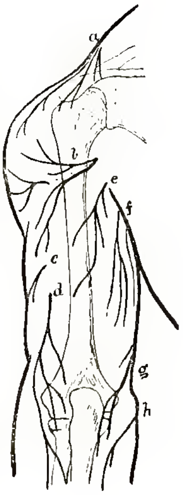
Hanhart imp

PLATE XIV.

THE BACK OF THE ARM AND MUSCULO-SPIRAL NERVE.

This plate shows a dissection to expose the musculo-spiral nerve as it lies in the musculo-spiral groove. The long and external heads of the triceps have been detached from the common tendon below, and turned outwards; the fascial expansion, which comes off from the lower and external part of the triceps, and covers the anconeus, has been partly reflected to expose that muscle. The nerve to the anconeus has been traced through the fibres of the internal head of the triceps.

The cutaneous nerve-supply of the back of the arm is shown in the adjoining diagram:—(*a*) Acromial branches of cervical nerves; (*b*) cutaneous branches from circumflex; (*c*) upper, and (*d*) lower external cutaneous branches of the musculo-spiral; (*e*) internal cutaneous branch of the musculo-spiral; (*f*) intercosto-humeral; (*g*) nerve of Wrisberg; (*h*) posterior branch of the internal cutaneous.



The close proximity of the musculo-spiral nerve to the bone, as it lies in the musculo-spiral groove, should be noted, as it is thus rendered liable to pressure-injuries: *e.g.* pressure of a badly-made crutch may produce paralysis, the so-called 'crutch-palsy.'

During the dissection of this region, do not forget to examine the course of the ulnar nerve behind the internal condyle, which it grooves, lying against the internal lateral ligament before it passes into the forearm between the two heads of the flexor carpi ulnaris. Whilst in the groove it is covered by a band of fibrous tissue which passes across from the back of the condyle to the olecranon: this is the degenerate remains of a muscle, the epitrochleo-anconeus, which exists pretty constantly in the lower mammals, including a few of the primates, but is not seen in the anthropoid apes.

It is also important to remember the relation of the ulnar nerve to the joint in excising the elbow, lest it should be damaged during the operation.

PLATE XIV.

MUSCLES

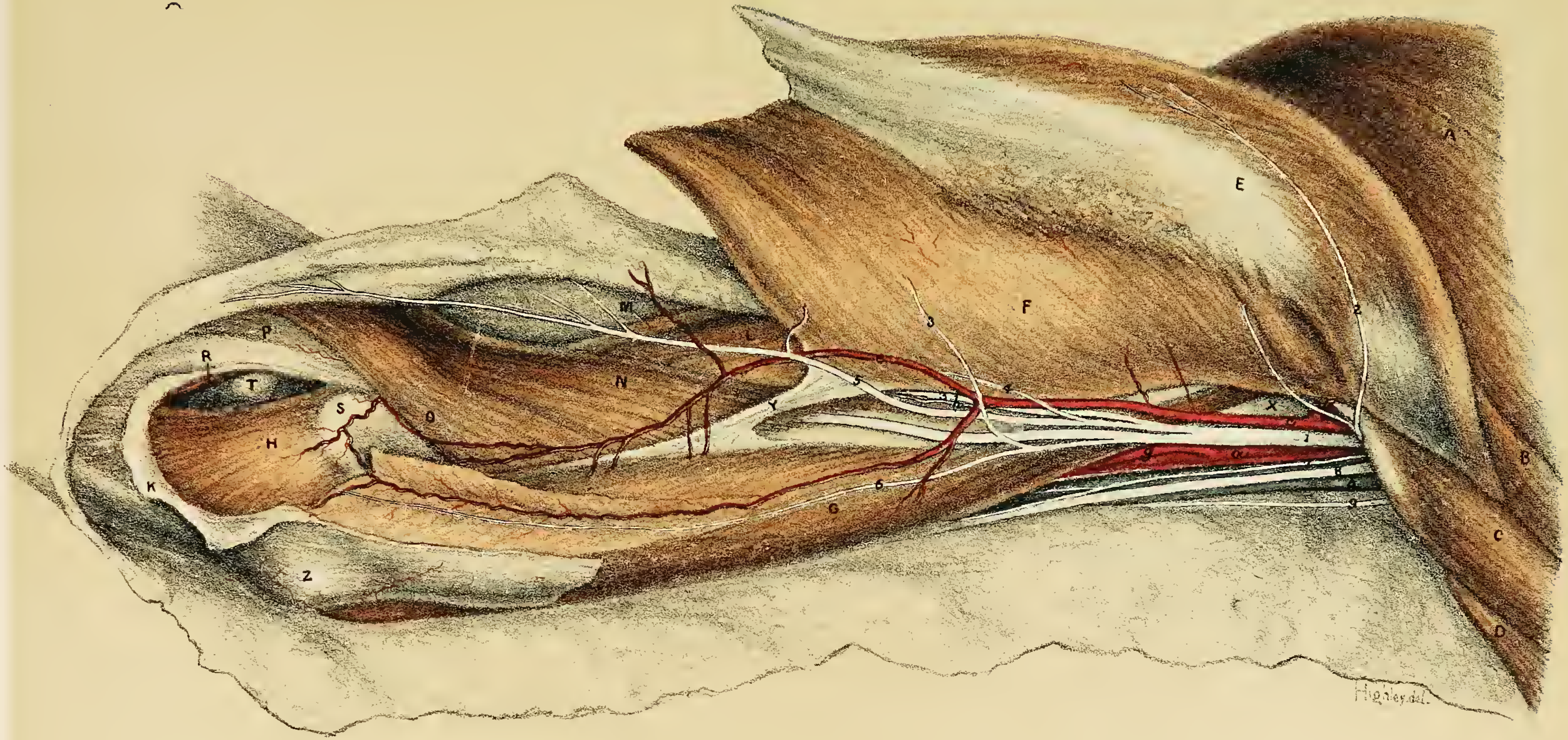
A Deltoid.
B Teres minor.
C Teres major.
D Latissimus dorsi.
E Long head of triceps.
F External head of triceps.
G Internal head of triceps.
H Anconeus.
K Fascia covering anconeus, reflected.
L Brachialis anticus.
M Biceps.
N Supinator longus.
O Extensor carpi radialis longior.
P Common tendon of extensor muscles.
R Edge of extensor carpi ulnaris, detached from its origin from the border of anconeus to show T.
S External condyle.
T Placed over head of radius.
Y External intermuscular septum.
X Shaft of humerus.
Z Olecranon.

VESSELS

a Brachial artery.
b Axillary vein.
c Superior profunda.
d Its anastomotic branch to posterior circumflex.
e Posterior terminal division of the superior profunda.
h Anterior terminal division of superior profunda.
g Inferior profunda.

NERVES

1 Musculo-spiral.
2 Its muscular branch to long head of triceps.
3 Its muscular branch to external head of triceps.
4 Upper external cutaneous branch, piercing the external head.
5 Lower external cutaneous branch passing over the external intermuscular septum.
6 Nerve to anconeus, also giving twigs to internal head.
7 Muscular branches to internal head of triceps.
8 Ulnar.
9 Lesser internal cutaneous.



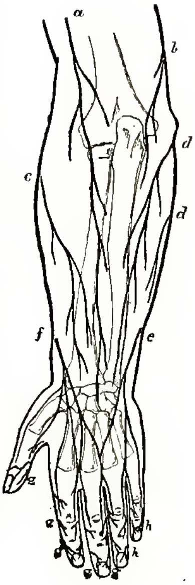
Highley del.

[illegible] Highley [illegible]

Dissected by C. G. Brodie

PLATE XV.

THE SUPERFICIAL DISSECTION OF THE BACK OF THE FOREARM.



This plate shows a superficial dissection of the muscles on the back of the forearm. The cutaneous nerves are shown in the sketch plan:—(*a*) External cutaneous of the musculo-spiral; (*b*) nerve of Wrisberg; (*c*) posterior branch of external cutaneous; (*d*) posterior branches of internal cutaneous; (*e*) dorsal branch of the ulnar; (*f*) radial; (*g*) twigs from the digital branches of the median; (*h*) twigs from the palmar digital branches of the ulnar, supplying the lateral aspect of the fingers. The diagram Plate XVII. shows more clearly the nerve-supply to dorsum of hand and fingers.

Note on the Anconeus.—This muscle is usually supposed to be a segmentation of the lower part of the triceps, both on account of its nerve-supply from the musculo-spiral, and also the continuity of the lower fibres of the triceps with it; but, on the other hand, in some lizards the anconeus is separate from the triceps, forming a portion of the extensor carpi ulnaris, and its nerve (a branch of the musculo-spiral) supplied also the supinator brevis, afterwards joining the posterior interosseous, and helping to supply the extensors of the fingers. In the alligator, the extensor carpi ulnaris is absent, a large anconeus doing its work, having a double nerve-supply, viz. from the musculo-spiral and posterior interosseous; this has been noted by Luschka as occurring in man. It may be concluded, therefore, that this muscle is more allied to the extensor carpi ulnaris than the triceps, and that its nerve originally took a larger share in the supply of the muscles on the extensor aspect of the forearm.[1]

It may also be added that the extensor carpi ulnaris arises from the fascia covering the anconeus for a short distance.

---

[1] The President: *Proc. Roy. Acad. Med. in Ireland*, 1888.—*Lancet* report.

PLATE XV.

MUSCLES

A Triceps.
B Anconeus.
C The fascial expansion from the triceps covering the anconeus, cut and turned back.
D Biceps.
E Brachialis anticus.
F Supinator longus.
G Extensor carpi radialis longior.
H Extensor carpi radialis brevior.
I Extensor communis digitorum.
K Extensor minimi digiti.
L Extensor carpi ulnaris.
M Extensor ossis metacarpi pollicis.
N Extensor primi internodii pollicis.
O Extensor secundi internodii pollicis.
X Annular ligament.
Y Placed on lower end of ulna.
Z Placed on lower end of radius.

VESSELS

a Posterior terminal branch of superior profunda.
b Anterior interosseous, posterior terminal branch.
c Termination of the posterior interosseous (rather larger than usual).

NERVES

1 Radial.
2 Dorsal branch of ulnar.

The extensor minimi digiti can only be said to arise from the external condyle by virtue of its origin from the intermuscular septum between the extensor communis and extensor carpi ulnaris which is attached there.

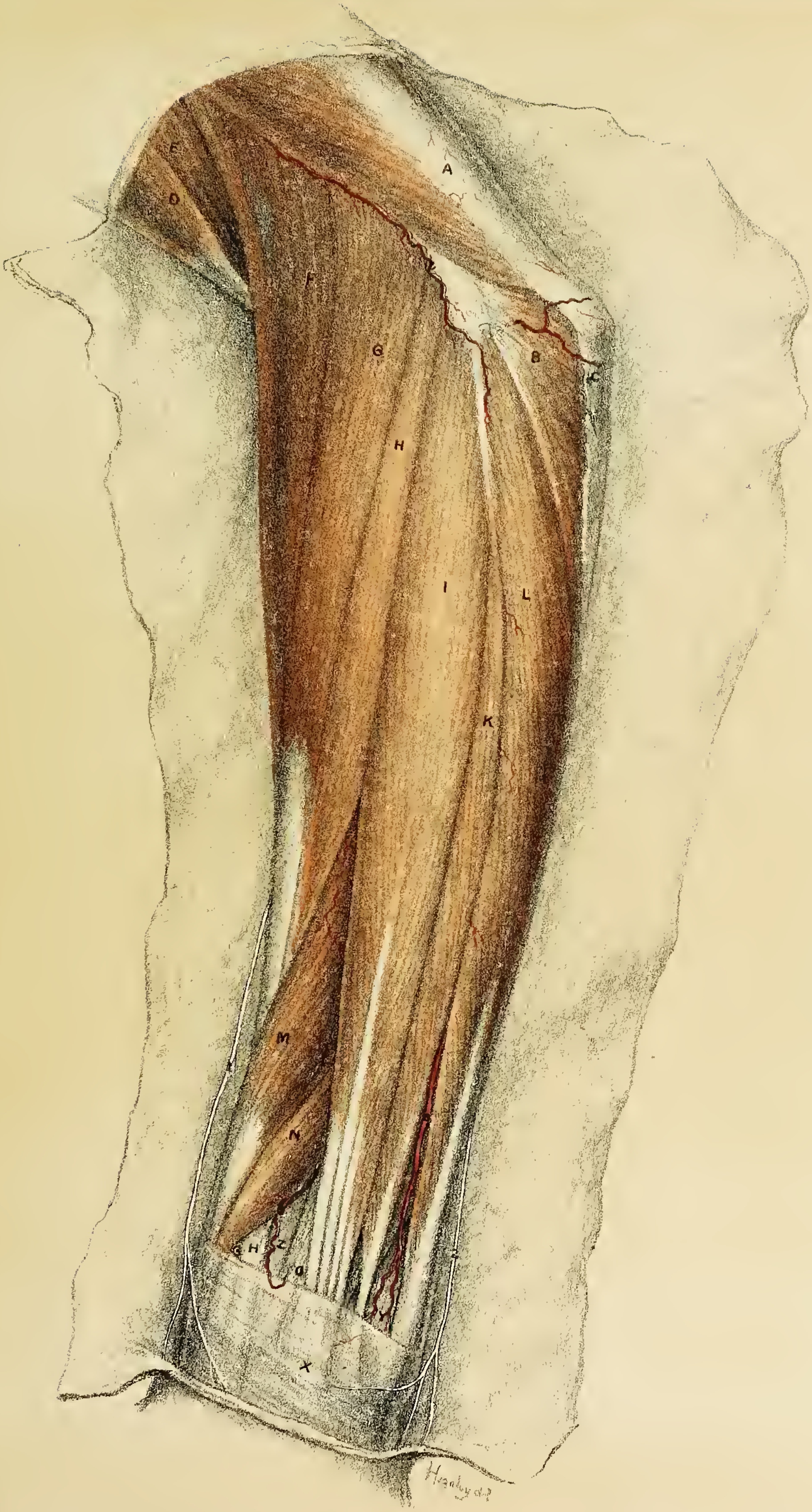


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PLATE XVI.

THE DEEP DISSECTION OF BACK OF FOREARM.

In this dissection the extensores communis digitorum, minimi digiti, and carpi ulnaris have been cut away to expose the deep layer of muscles in the forearm, and the posterior interosseous artery and nerve.

Note on the Extensor medius.—A separate tendon to the middle finger is not uncommon; it usually arises by a muscular belly attached to the posterior surface of the ulna below the extensor indicis; its tendon runs down through the same compartment of the annular ligament as the extensor communis digitorum, but deep to it, and joins the common extensor tendon of the middle finger in the same way as the extensor indicis joins with that of the index finger.

Thus the extensor tendons may be divided into two sets—a *common* set, which is superficial (the extensor communis digitorum); and a *special* set, of which the extensor minimi digiti is superficial and constant, the extensor indicis deep and constant, the extensor medius deep and fairly frequent; the only one missing being the extensor annularis, which is very rare; but, as Mr. Sutton has pointed out, if the fascia of the forearm be carefully examined, a thin glistening band of tendinous fibres will be seen lying in it, in the intermuscular septum between the extensor carpi ulnaris and the extensor minimi digiti, arising in common with the latter, and passing down to become lost in the fibrous tissue at the back of the wrist. This, in Mr. Sutton's opinion, is probably the degenerate remains of the extensor annularis, which in process of shifting its origin from the condyle of the humerus to the ulna has become lost. This opinion is strengthened by the fact that the extensor minimi digiti does not arise by muscular fibres from the condyle, but takes its origin from the intermuscular septum between the extensor carpi ulnaris and the extensor communis digitorum, as though this muscle also was in process of descending from its condylar to some lower attachment.

The so-called ganglion on the posterior interosseous nerve is only a thickening of its perineurium.

PLATE XVI.

MUSCLES

A Triceps.
B Biceps.
C Brachialis anticus.
D Anconeus.
E Supinator longus.
F Extensor carpi radialis longior.
G Extensor carpi radialis brevior.
H Supinator brevis.
I Extensor ossis metacarpi pollicis.
K Extensor primi internodii pollicis.
L Extensor secundi internodii pollicis.
M Extensor indicis.
N Extensor medius.
O Cut origins of the extensor minimi digiti and communis digitorum.
P Cut origin of extensor carpi ulnaris.
P′ Tendon of extensor carpi ulnaris (insertion).
R Insertion of pronator radii teres.
S Dorsal interossei.
T Adductor pollicis.
V Abductor minimi digiti.
X Posterior ligament of wrist.
Y Flexor ossis metacarpi minimi digiti.

VESSELS

a Posterior interosseous artery.
b Recurrent branch of posterior interosseous, ascending under cover of anconeus.
c Posterior terminal branch of superior profunda.
d Radial artery.
e Posterior carpal of radial.
f Metacarpal of radial coming off, as it often does, in common with the posterior carpal.
g Posterior carpal of ulnar.
h Dorsalis indicis.
i Metacarpal arteries from posterior carpal arch.
k Posterior branches of anterior interosseous artery.
l Radial recurrent.

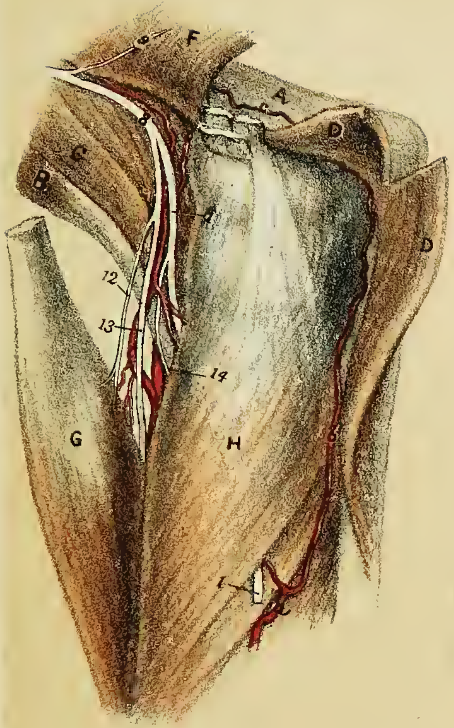
NERVES

1 Posterior interosseous.
2 Its muscular branches to the extensores carpi ulnaris, communis digitorum, and minimi digiti.
3 Terminal branch, with slight enlargement (pseudo-ganglion) on it at wrist.
4 Its branch to extensor ossis metacarpi pollicis.
5 Its branch to extensor primi internodii pollicis.
6 Its branch to extensor secundi internodii pollicis.
7 Its branch to the extensores indicis and medius.
8 Musculo-spiral.
9 Its branch to supinator longus.
10 Its branch to extensor carpi radialis longior.[1]
11 Its branch to brachialis anticus.
12 Branch to extensor carpi radialis brevior.[2]
13 Radial nerve.
14 Branch of posterior interosseous to supinator brevis.

---

[1] The branch from the musculo-spiral to (F) the extensor carpi radialis longior in the small sketch has been numbered 9 instead of 10.

[2] The branch to the extensor carpi radialis brevior usually comes off from the posterior interosseous, but here it came off from the musculo-spiral, and ran down loosely attached to the radial nerve from which it appears in the plate to take its origin.



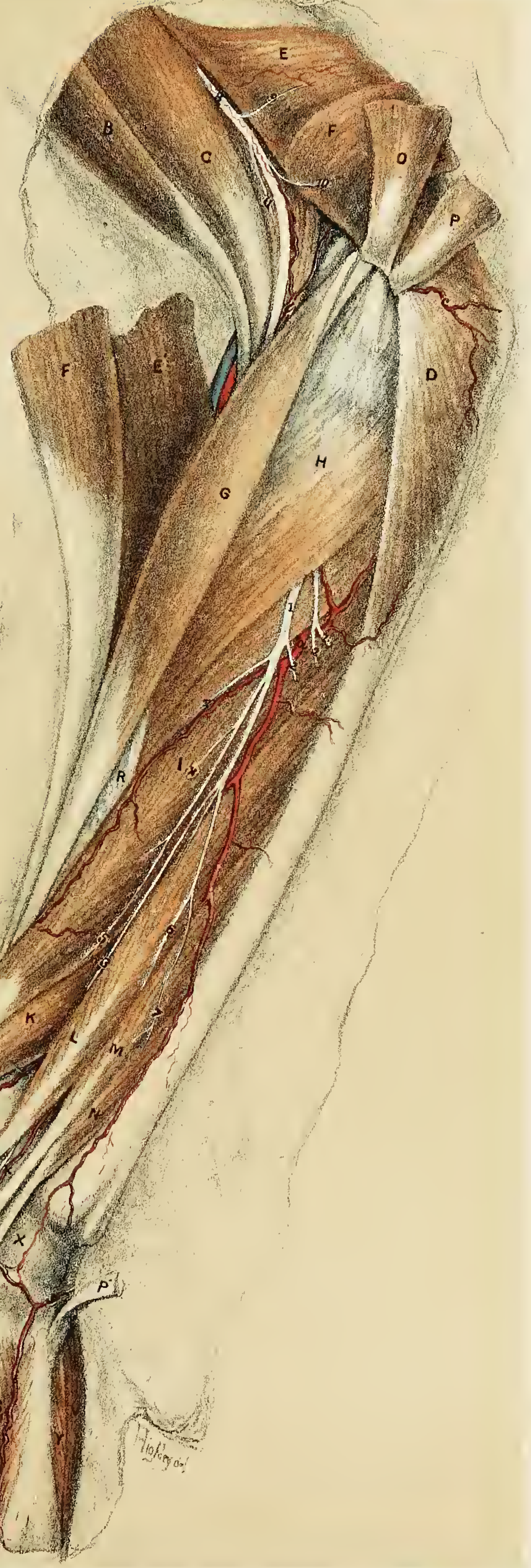


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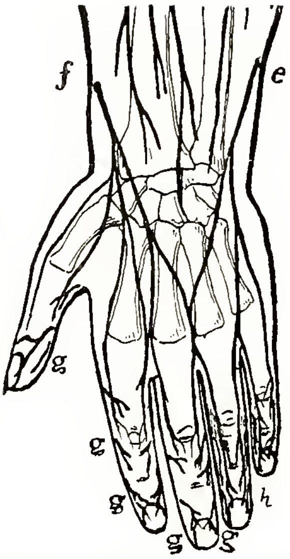
PLATE XVII.

THE DORSUM OF THE HAND.

This dissection shows the structures on the dorsum of the hand.

In order to show more clearly the nerve-supply on the back of the hand and fingers, the following diagram has been introduced:—(*e*) dorsal branch of ulnar; (*f*) radial nerve; (*g*) twigs from the digital branches of the median supplying the dorsal aspect of the phalanges; (*h*) twigs from the palmar digital branches of the ulnar which supply chiefly the lateral aspects of the little and half the ring finger. Those twigs on the ulnar side of the little finger could not be shown for want of space.



The six different compartments of the posterior annular ligament are, starting from the radial side:—

I. For the extensor ossis metacarpi and primi internodii pollicis.
II. For the extensor carpi radialis longior and brevior.
III. For the extensor secundi internodii pollicis.
IV. For the extensor communis digitorum and extensor indicis.
V. For the extensor minimi digiti.
VI. For the extensor carpi ulnaris.

The synovial sheath of the extensor secundi communicates with that of the extensores carpi radiales as they cross each other.

PLATE XVII.

MUSCLES

A Extensor communis digitorum.
B Extensor minimi digiti.
C Extensor carpi ulnaris.
D Extensor ossis metacarpi pollicis.
E Extensor primi internodii pollicis.
F Extensor secundi internodii pollicis.
G Extensor indicis.
H Extensor carpi radialis brevior.
I Extensor carpi radialis longior.
K Dorsal interossei; the first is sometimes called the abductor indicis.
L Adductor pollicis, sending an expansion on to the extensor secundi internodii pollicis.
M Posterior annular ligament; the six different compartments are indicated by numerals.
N Expansion from the interossei to the extensor tendons (on the radial side it is also joined by the expansion from the lumbricales).
O Abductor minimi digiti.
P Flexor ossis metacarpi minimi digiti.
V Vinculæ.

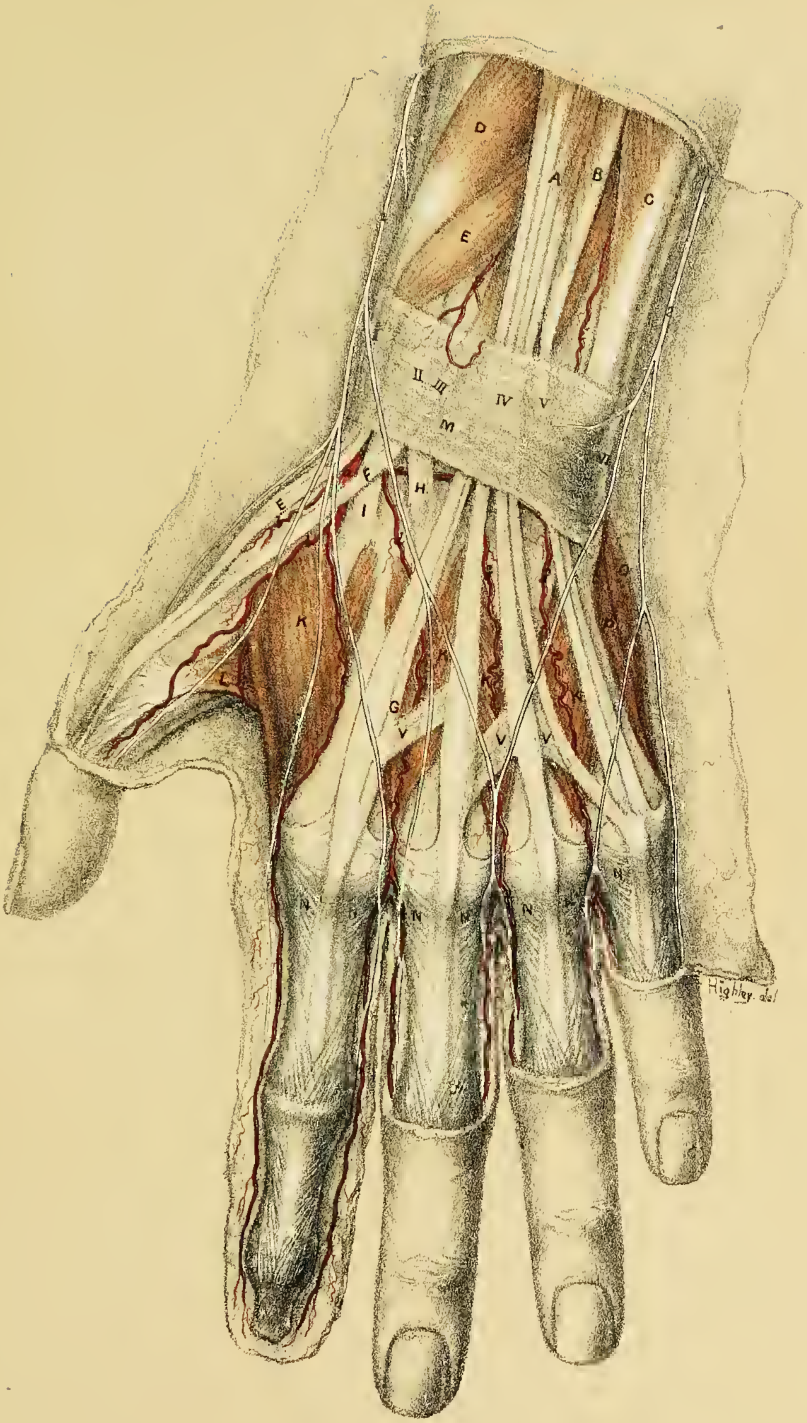
VESSELS

a Radial artery.
b Dorsales pollicis.
c Dorsalis indicis.
d Metacarpal.
e Posterior carpal of radial.
f Metacarpal arteries from posterior carpal arch.
g Posterior terminal branch of anterior interosseous.
h Radialis indicis.
i Terminal branch of posterior interosseous.

NERVES

1 Radial.
2 Dorsal branch of ulnar.

The common extensor tendon for the little finger runs down parallel to that of the ring, and only branches away from it towards the lower part of the interosseous space, then joining the radial of the two tendons, into which the extensor minimi digiti divides.



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